8-2012

Mindfulness and Self-Compassion: Exploring Pathways to Adolescent Emotional Well-Being

Karen Leslie Bluth
bluth@utk.edu

To the Graduate Council:

I am submitting herewith a dissertation written by Karen Leslie Bluth entitled "Mindfulness and Self-Compassion: Exploring Pathways to Adolescent Emotional Well-Being." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Child and Family Studies.

Priscilla W. Blanton, Major Professor

We have read this dissertation and recommend its acceptance:

Brian K. Barber, John Orme, Robert G. Wahler

Accepted for the Council:
Dixie L. Thompson

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

Mindfulness and Self-Compassion: Exploring Pathways to Adolescent Emotional Well-Being

A Dissertation
Presented for the
Doctor of Philosophy Degree
The University of Tennessee, Knoxville

Karen Leslie Bluth
August 2012

Dedication

I dedicate this to my daughters, Mackenzie and India, who have inspired me to reach higher than I thought I could attain; to my parents, Dave and Doris, who have supported me throughout my education; and for Dale, who has helped me through every minute step in this arduous adventure, from feeding me meals to fixing midnight computer glitches. May you all remember to always treat yourselves with kindness and compassion.

Acknowledgements

First, I would like to acknowledge my committee members. I wish to thank Dr. Priscilla Blanton, chair of my dissertation committee, for her wisdom, guidance, sense of humor and unflappable disposition. Her experience and insight made this process much less stressful than it would have been otherwise. Dr. John Orme was always available for statistical guidance, answering more emails than I would like to admit. I would also like to thank Dr. Brian Barber for challenging me throughout this process, forcing me to take another look at my methods or data, making sure I was considering all angles and addressing all potential issues. Dr. Bob Wahler guided me through my first research project on mindfulness, which provided me with my first solo experience collecting and analyzing data, and gave me the opportunity to become familiar with the mindfulness literature.

I thank Dr. Mary Jane Moran for her friendship and insight, and for taking me under her wing when I was a fledgling who didn't know qualitative from quantitative data, or what APA meant. It was a steep learning curve, and her patience and professionalism were always front and center. Although I never had a class with him, Dr. Spencer Olmstead's door was always open, helping me through numerous questions about methodology or statistics.

Through our weekly "agraphia" group meetings at Panera, I received support and friendship from my graduate student colleagues: Teri Henke, Swapna Purandare, Min-Jung Jung, Juli Sams, and Carolyn Spellings. Sharing this experience with them helped me surmount the many inevitable obstacles that come with a project such as this. I would also like to thank Patricia Roberson for so readily sharing her knowledge about statistics and Mplus, and emailing pdfs or websites that helped to address my questions.

Last, but absolutely not least, I would like to thank the staff in the Child and Family Studies office: Carole McDonald, Sonja Spell, Sandy Russell, Barbara Bright and Scarlett Powell for their friendship and groundedness, reminding me that there was life outside my work, and always being there to share stories. I will miss you!

Abstract

Adolescents today are confronted with the compounded stressors of life in our high-pressured society and the cognitive, physiological, and emotional changes that are characteristic of this stage of development. As a result, they often struggle with self-doubt, leading to depression, anxiety, and maladaptive trajectories. Mindfulness, or paying attention in the moment in an intentional and purposeful way, has been reported to have positive effects on emotional well-being in adults, and shows promise for similar results in recent research with children and adolescents.

Moreover, the mechanisms through which being mindful achieves positive outcomes has only recently been explored, and has not been investigated with adolescents. In this study, self-compassion, defined by the three components of self-kindness, feeling part of a common humanity, and maintaining perspective in challenging circumstances, was examined as a potential mediator in the relationship between mindfulness and dimensions of emotional well-being. Measures assessing mindfulness, self-compassion, positive and negative affect, life satisfaction, and perceived stress comprised an online survey that was administered to 67 adolescents in an urban high school. Path analysis was utilized to investigate relationships among the variables. An alternate model with self-compassion as the predictor and mindfulness as the mediator was examined as well.

Results indicated that self-compassion functioned as a mediator in the relationship between mindfulness and both negative affect and perceived stress, but not in the relationship between mindfulness and positive affect or life satisfaction. In the exploration of the alternate model, mindfulness mediated the relationship between self-compassion and negative affect, self-compassion and life satisfaction, and self-compassion and perceived stress, but not between self-

compassion and positive affect. Additionally, gender was found to moderate the relationship between the variables. A theorized model was presented which depicts a reciprocal relationship between mindfulness and self-compassion and describes an iterative process that takes place between these two constructs, resulting in positive emotional well-being.

Implications for future research include a mindfulness intervention study in which constructs are measured at three separate time points, clarifying direction of effects. Behavioral outcomes can also be measured post-intervention. Moreover, the gender effect can be further investigated by measuring these constructs with different populations.

The faculty of voluntarily bringing back a wandering attention, over and over again, is the very root of judgment, character, and will...An education which should improve this faculty would be the *education* par excellence. -- William James, *The Principles of Psychology* (1890)

It is not necessary for a crow to become an eagle. -- Sitting Bull

You can't be compassionate with others unless you're first compassionate with yourself.
-- Dr. Jerry Murphy, former dean of Harvard School of Education
(presentation at International Symposia for Contemplative Studies, April 28, 2012)

Table of Contents

List of Tables

List of Figures

Chapter 1 - Background

Introduction

We live in a culture where daily stress is taken for granted. It permeates our lives through our attempts to balance the many roles society seems to demand of us: employee, parent, spouse, homemaker, chauffeur, cook, soccer mom/dad, all while looking attractive and without a show of anxiousness. Our culture regales those of us who are lucky enough to be "successful", often defined by the material goods we possess; we frequently find ourselves working longer hours or looking for better paying jobs so that we too can join the ranks of the "successful". As a result of our increased time commitments outside the home, our role overload as functioning adults in a family system increases and stress within the family itself mounts.

Whether as a result of our busy lives, the influence and expectations presented by the media, our children also are beginning to show signs of stress. A new book entitled *Parenting Your Stressed Child* is evidence of how pervasive this issue has become. The author explains that the pressures accumulating from school, peer interactions, and day-to-day family living can be enormously stressful for children (Bailey, 2011). Gone are the long afternoons playing fantasy games in fields outside or kickball in a neighbor's backyard until mom opens the door of your house and calls you for dinner. Children's afternoons today are often filled with back-to-back planned scheduled activities, interspersed with trips in the van where they hurriedly complete their daily math problems while munching on their afternoon chimichanga from Taco Bell.

Adolescents are exposed to the same stressors of school, activities, and family life as are their younger counterparts. However, they are also subject to the rapid cognitive, physiological, and psychosocial changes that are characteristic of this stage of development. Although defining adolescence as a period of "storm and stress" is no longer accepted as valid (Susman & Dorn,

2009), we do know that adolescents are confronted with the compounded stressors of life in our high-pressured society and the experience in an adolescent body. It's not an easy road.

How do we address this problem? How do we help adolescents negotiate what can be challenging territory? The proposed study explores the pathway through which mindfulness, a 2500 year old practice recently introduced in the West, impacts adolescents' emotional well-being.

Rationale

Over the last 30 years, empirical studies have offered ample evidence for the positive physiological and psychological effects of mindfulness on adults (Baer, 2003; Grossman, Niemann, Schmidt, & Walach, 2004); however, empirical research on adolescents is minimal (Burke, 2010; Twohig, Field, Armstrong, & Dahl, 2010). Moreover, empirical research on the mechanisms linking mindfulness to outcomes (i.e. mediators) in adults is in its early stages, and is nonexistent in mindfulness research on adolescents (Twohig et al., 2010). The proposed study would be one of the first to explore the pathway through which mindfulness practice may effect dimensions of emotional well-being in adolescents. Furthermore, the meditational role of self-compassion has been explored in only one study in adolescents (Neff & McGehee, 2010). Recognizing that adolescents are often engaged in comparing themselves to their peers in an attempt to establish their position in the social hierarchy and as a result are frequently self-critical and doubting their self-worth (B. Brown & Lohr, 1987; Harter, 1990; Simmons, Rosenberg, & Rosenberg, 1973), it may be salient to explore how self-compassion may link mindfulness to emotional well-being. Greater self-compassion may promote a sense of increased self-acceptance and less self-criticism and help to combat negative self-judgment in adolescents.

The proposed study investigates the potential mediating role of self-compassion on the relationship between mindfulness and the emotional well-being of adolescents.

Purpose of the Study

The purpose of this study is to determine whether self-compassion mediates the relationships between mindfulness and dimensions of emotional well-being among adolescents. To do this, it is essential to first determine whether mindfulness is related to both self-compassion and dimensions of emotional well-being. Next, the relationship between self-compassion and dimensions of emotional well-being must be established when controlling for mindfulness effects. The relationships between mindfulness and dimensions of emotional well-being are then examined while controlling for self-compassion. The extent of self-compassion as mediating the relationship between mindfulness and dimensions of emotional well-being can thus be ascertained. Data will be collected using quantitative survey measures of mindfulness and self-compassion; emotional well-being will be measured by four dimensions: positive and negative affect, perceived stress, and quality of life. These constructs were selected to describe emotional well-being because of their use in previous mindfulness studies thus facilitating comparison of results (Biegel, Brown, Shapiro, & Schubert, 2009; Boguls, Hoogstad, van Dun, de Schutter, & Restifo, 2008; Broderick & Metz, 2009; Ciarrochi, Kashdan, Leeson, Heaven, & Jordan, 2010; Schonert-Reichl & Lawlor, 2010; Shapiro, Brown, & Biegel, 2007).

Objectives of the Study

The main objective of this study is to explore the relationships between self-compassion, mindfulness, and emotional well-being in an adolescent population. The primary objectives can be outlined as follows:

1. To investigate whether mindfulness correlates with dimensions of emotional well-being among adolescents, and
2. To examine a model to establish whether self-compassion mediates the relationship between mindfulness and dimensions of emotional well-being, and
3. To examine alternate models of the relationships among mindfulness, self-compassion, and dimensions of emotional well-being.

Theoretical Basis for the Study

This study is grounded in stress and coping theory (Lazarus, 1999; Lazarus & Folkman, 1984), and the interpersonal neurobiology framework (Siegel, 2001). Stress and coping theory articulates the way in which individuals appraise the meaning that a given experience has for them. As mindfulness practice has been reported to facilitate a *reperceiving*, or shift in perspective of one's experiences (Shapiro, Carlson, Astin, & Freedman, 2006), stress and coping theory, particularly in its description of the primary appraisal process, informs and anchors how mindfulness practice leads to reperceiving. One of the contributing factors to the appraisal process is the personal resources that each individual has and brings to the experience; the degree to which one is mindful can be considered to be one of these personal resources.

Interpersonal neurobiology interfaces with stress and coping theory by suggesting a method by which individuals can alter and improve upon the personal resources available to them, i.e. by changing the function and structure of their brain through mindfulness practice. The processes through which this occurs will be described in detail later. Stress and coping theory will be discussed first, followed by a description of the interpersonal neurobiology framework and an explanation of the way in which these two theories complement each other.

Stress and coping theory. Stress and coping theory describes the way in which individuals perceive, appraise, and cope with daily environmental events (Lazarus, 1999; Lazarus & Folkman, 1984). The theoretical grounding for this study will specifically focus on the conceptualization of appraisal and the process through which an individual understands and interprets environmental events. Appraisal is defined as the evaluative process through which an individual first perceives the occurrences in her environment and then determines the degree to which this occurrence is a threat. This interaction between environmental occurrences and the individual is termed *transactional*, because it encompasses more than a simple interaction between two variables; the individual brings to the relationship a complexity of factors, including individual personality characteristics, past experiences, and potential effect on other aspects in one's life, all of which may influence how the individual responds to the environmental event. This transactional process of how an individual appraises her environment will be discussed in greater detail below.

Lazarus (1999) defines two types of appraisal which an individual experiences: primary and secondary. Primary appraisal involves the individual's evaluation of how the external event is relevant to her values, goal commitments, and beliefs about herself and the world. If she perceives the event not to be impacting any of these factors, for example, she will experience no stress. On the other hand, if she experiences the event to be a threat to her goals, she will experience stress. Her alternatives in responding to an event can either be that she has experienced a loss, that the event is a threat, or that this is an opportunity to take on a challenge. Seeing the event as a challenge can have positive outcomes, and has been called eustress (Selye, 1974).

Secondary appraisal is a cognitive process through which an individual evaluates her options in responding to the event, particularly if the primary appraisal has determined that the environmental event is either harmful, a threat, or a challenge. Through this process she engages in an active search for meaning to the event, and assesses the different ways in which she can respond to the event. In other words, through secondary appraisal, an individual evaluates her coping options (Lazarus, 1999).

This study is informed by the way in which an individual processes the environmental event through the *primary appraisal process*, and for this reason this process will be articulated in detail; secondary appraisal process will be summarized briefly. Personal variables and environmental variables are components of the primary appraisal process. Mindfulness can be considered as a personal resource, one of the three categories defining personal variables. To understand the process of primary appraisal, then, one must ask the question: What determines whether an individual perceives an event to be a threat or a challenge? The way in which stress and coping theory articulates this determination is outlined next.

Primary appraisal. The transactional process takes place between the person and her environment. The variables within the person (goals and goal hierarchies, beliefs about self and world, and personal resources) and within the environment (demands, constraints, opportunity, and culture) interact to influence how the person eventually appraises the event. The person variables will be discussed first, as these variables (i.e. personal resources) are those which inform this study.

Personal variables. Personal variables are attributes of the person that influence the way in which she interacts with environmental events, which in turn are influenced by environmental

factors. Environmental influences are discussed in detail following the discussion of personal variables.

Goals and goal hierarchies are a critical influencing factor in determining the answer to the focal question an individual asks in primary appraisal: What do I have at stake in this situation? If she determines that none of her goals are at stake, there is little likelihood of negative stress. If the event supports progress to a goal, however, she will likely experience positive emotions. In situations where an event may positively influence one goal and negatively influence another, the individual must decide which goal is more important in that situation, and positive or negative emotions will result (Lazarus, 1999).

One's personal resources (e.g. intelligence, social skills, friends and family, health, degree of mindfulness) also influence how one adapts to situations in one's environment by their effect on what the adolescent is able to achieve and acquire in relation to her needs, wants, and goals. Many of these are innate, and others are established and strengthened through life experience. As it relates to this study, for example, mindfulness can be cultivated and developed through practice. In addition, a number of these resources become stable personality traits over time and therefore are less likely to change (Lazarus, 1999); this is also posited to be the case with mindfulness (Salzberg, 2011).

Lastly, one's beliefs about self and one's place in the world impact one's expectations of the outcomes of each transaction with the environment. The degree to which one believes that she can overcome difficult situations, for example, influences what she expects her emotional outcome of the situation to be. The degree to which she feels she has responsibility for the situation, or blames herself for the negative outcome of the situation, impacts the extent of the resulting negative emotional tone.

Environmental variables. As discussed here**,** environmental variables are aspects of the environment that influence the process of appraisal (Lazarus, 1999).

Demands are the expectations one learns from society to behave in a certain way and to demonstrate expected attitudes. Such attitudes include being respectful to others, taking care of one's family, maintaining a degree of order to one's home, parenting responsibly, earning a living, and adapting to social conventions. Frequently the conflict between what society demands of us and our personal goals are the primary source of stress.

In contrast to demands, constraints are the dictates promoted by society of that which we should *not* do. For example, outward aggression or violence when angered is deemed inappropriate in most situations, although permissible in others (Lazarus, 1999). In relation to coping with stress, complaining to one's boss about the amount of work or asking for time off from work to balance family demands when a work deadline is approaching is likely to be considered inappropriate and possibly interpreted negatively by one's superior.

Opportunity can be described as the fortunate confluence of an event and timing. It may also encompass the awareness involved in recognizing the existence of an opportunity and positioning oneself in a way to address the possible outcomes. In this way, it reflects the impact of an interaction between a person and her environment.

Although there has been a good deal of discussion about the influence of one's culture on one's emotional responses, Lazarus (1999) maintains that there are certain universals that transcend cultural influences. He contends that if a person appraises a situation in a certain way, she will then experience a certain emotional response (Lazarus, 1991).This will take place independent of the person's culture. Thus, a particular relational meaning, i.e. appraisal of the event, is tied to a specific emotion, regardless of the individual experiencing it or the setting in

which it takes place. It is important to remember here that it is the appraisal that must remain constant for the emotional outcome to be the same, not the event in itself. In other words, the same situation may provoke different relational meanings or appraisals in different cultures; however, in this case since the appraisal differs the resulting emotion will differ as well.

Interpersonal Neurobiology. This study is also grounded in the interpersonal neurobiology framework (Siegel, 2001). This framework encompasses a multidisciplinary approach to understanding how one's experiences have the potential for changing the function and structure of the brain. The concept of *mindsight* is integral to the framework; mindsight is defined as the cultivated ability of the mind to perceive and understand oneself and one's experiences in the present with more clarity, independent of the emotional influence of past experiences (Siegel, 2010). Mindfulness practice, then, cultivates mindsight, and through mindfulness practice, one develops greater focused attention in the moment and moves toward a more integrated relationship with oneself. Integration, developed through mindsight, is the primary attribute responsible for positive mental health and emotional well-being. One who is "integrated" is described as being flexible, adaptive, coherent, energized, and stable (Siegel, 2010). Integration itself is a balance between chaos and rigidity, and individuals generally tend to gravitate towards one of these extremes or the other. Therefore, through increasing mindfulness, one cultivates mindsight, leading toward integration and improved emotional well-being.

The basic principle behind interpersonal neurobiology is based on the concept that our emotional experiences create "neural maps" or networks of neural firings in particular areas of the brain (Siegel, 2001). Although the process is not completely understood, cognitive neuroscientists generally agree that it is the pattern of these neural firings that is thought to be what constitutes the concept of the mind (Siegel, 2001). The mind is thus understood to be

patterns in the flow of energy and information (Siegel, 1999). Taking this one step further, it is possible then to change the physical structure of the brain by changing the emotional relationship one has to one's experiences. In fact, it is now understood that the human brain is "plastic"; it is continually engaging in establishing new neural networks as the result of new experiences and pruning unused neural pathways that appear to be no longer needed (Siegel, 2010).

Through increasing integration and establishing new neural networks, one adds to the cache of personal resources. The individual has developed some degree of mindsight, and is more able to perceive experiences clearly, unencumbered by the emotional "pull" of past experiences. In addition, the individual has a clearer sense of her position in relation to others and in the various roles in which she finds herself situated in daily life. In conclusion, the transactional experience between her personal variables and the environment have been altered through the development of mindsight and resulting influence on her personal resources.

Nominal Definitions

1. Mindfulness: paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally (Kabat-Zinn, 1994)
2. Self-compassion: mental state in which one exercises the following: a) extending kindness and understanding to oneself rather than harsh self-criticism and judgment; b) seeing one's experiences as part of the larger human experience rather than as separating and isolating; and c) holding one's painful thoughts and feelings in balanced awareness rather than over-identifying with them (Neff, 2003a)
3. Adolescence: the interval between childhood and the assuming of adult roles and responsibilities, encompassing physical, emotional, and mental development (Dorn, Dahl, Woodward, & Biro, 2006)

4. Perceived stress: the degree to which one views their life as being stressful, i.e. unpredictable, uncontrollable and overloading (S. Cohen, Kamarck, & Mermelstein, 1983)
5. Life satisfaction: a general assessment of a person's quality of life, according to her own chosen criteria (Shin & Johnson, 1978)
6. Positive affect: a general dimension of positive mood states including enthusiasm, energy, and alertness (Watson, Clark, & Tellegen, 1988)
7. Negative affect: a general dimension of aversive mood states including anger, contempt, disgust, fear, guilt, or nervousness (Watson et al., 1988)

In the following literature review, I will first address the construct of mindfulness and discuss the various ways in which it is conceptualized and operationalized in empirical studies. I include in this section a description of a number of scales that are commonly used in mindfulness research and articulate the ways in which they reflect the various conceptualizations of mindfulness. Following this, I will provide descriptive data of the base levels of mindfulness in various community and clinical samples. Next, I will briefly review the results of past mindfulness research with adult samples, and then in more detail, expand upon the findings of studies which have been conducted on adolescent samples. Finally, I will explore potential mediators that might explain the relationship between mindfulness and positive emotional well-being outcomes, focusing most closely on the role of self-compassion as a potential mechanism of change in this relationship.

Chapter 2 - Review of Literature

What is Mindfulness?

Rooted in Eastern contemplative traditions, mindfulness is a state of consciousness in which one brings awareness and attentiveness to the immediate experience (Grossman, 2010a). Conceptually, it is also found in a variety of philosophical traditions including ancient Greek philosophy, phenomenology, existentialism in Western European cultures, and humanism and transcendentalism in the U.S. cultural tradition (K. W. Brown, Ryan, & Cresswell, 2007). The term itself comes from the Pali language and is broadly defined as awareness, circumspection, discernment, and retention (Shapiro, 2009). Recognizing that it is both an outcome, as when one refers to mindful awareness, and a process, as that which occurs when one engages in mindfulness practice, one definition which encompasses this construct is, "The awareness that arises through intentionally attending in an open, accepting, and discerning way to whatever is arising in the present moment" (cf. Shapiro, 2009, p. 556).

It is important to clarify the difference between mindfulness as an outcome, which will be referred to herein as mindfulness and mindfulness as a process, referred to herein as mindfulness practice. Mindfulness is described as a state or trait in which an individual becomes increasingly aware and attentive in the moment. Depending on the definition to which one chooses to ascribe (Bishop et al., 2004; Grossman, 2008), this may include specific qualities such as acceptance or the ability to describe an inner experience in the moment that it is taking place. Mindfulness practice, on the other hand, refers to a regular practice, usually daily, in which one dedicates a period of time to engage in a breath awareness practice, sometimes referred to as meditation. In addition to the breath awareness practice, daily mindfulness practice sometimes incorporates mindful movement (gentle yoga), and a body awareness practice referred to as a body scan.

Additionally, a third term, mindfulness intervention, will be used frequently in this paper. Mindfulness intervention refers to a program or series of classes in which one is taught mindfulness practice techniques and encouraged to develop a daily practice. The most empirically tested mindfulness intervention is Mindfulness-Based Stress Reduction (MBSR) (Kabat-Zinn, 1982, 1990), developed in 1979 at the University of Massachusetts Medical Center. One would expect that a mindfulness intervention would result in raising one's level of mindfulness, although this cannot be assumed to be true, but rather must be tested empirically by using existing mindfulness scales which will be discussed in detail later in this chapter.

To understand the implications of both mindfulness and mindfulness practice, it is imperative to recognize certain basic assumptions characteristic of the human mind state. The most foundational of these is that as humans, we are generally unaware of our momentary experience (Grossman, 2010a), and that our cognitive and emotional responses to these moment-to-moment sensory experiences occur so quickly following the experiences that they would appear to be simultaneous; I will refer to this as the "sensory-thought-emotion reactivity chain". As a result, we act on "automatic pilot" in most situations, reacting emotionally without discernment, often leading to misperceptions of the situations (Grossman, 2010a).

Mindfulness offers an alternative way of processing experiences. This process involves a non-judgmental or preconceived receptive attention and awareness of that which is taking place in the moment. Mindfulness, then, has been referred to as "bare attention" (Engler, 1986; Gunaratana, 2002; Nyaniponika, 1973), as it involves the "bare registering of the facts observed" in one's immediate experience (K. W. Brown et al., 2007, p. 212). Through mindfulness practice, one then becomes able to uncouple the "sensation–thought–emotion reactivity chain". As one becomes more aware and observant of habitual thought and emotional responses to the

momentary experience, one is able to pause before immediately responding with either (or both) thoughts or emotions. Both thoughts and emotional responses are observed during mindfulness practice as ephemeral; they are noticed as they emerge, are present, and then gradually dissipate. One becomes aware that thoughts and emotions are not solid, intimately and irrevocably linked to one's essential experience, as they were previously understood to be. Rather, through observing how one's mind responds to momentary experiences through mindfulness practice, one discovers that thoughts and emotions are fleeting, and not irrefutably linked to one's experience. Mindfulness practitioners discover that once an experience is perceived through our senses, there is an array of possible ways to respond. The uncoupling of the "sensation-thought-emotion reactivity chain" has occurred, and we can now experience the sensations of the moment with "bare attention", unattached to judgments, thoughts, or emotional responses.

There has been a fair amount of debate over how mindfulness is defined, and a series of meetings of researchers in the field took place to develop an operationalized definition (Bishop et al., 2004). Through their debate and discussion, a two component model of mindfulness was established consisting of (a) self-regulation of attention, described as bringing awareness to the focus of attention so that one is able to attend fully to the continually changing field of thoughts, feelings, and sensations, and (b) orientation to experience, which refers to the attitude or approach one takes in attending to the present moment. Mindfulness practice encourages an approach of openness, curiosity and acceptance. When practicing this approach with regularity, one becomes less likely to avoid or suppress certain emotions, since they are perceived as less threatening. Self-criticism wanes since that which one experiences in the moment is no longer loaded with emotional meaning and self-judgment, but accepted as an integral part of the condition of being human (Salzberg, 2011). In other words, instead of our thought process being

constantly engaged with trying to make things better and judging ourselves for not meeting our own expectations of ourselves, we "let go" of trying to make things different than they are, and accept that which is before us. In this process, we exercise a compassionate stance towards ourselves, and with regular practice, this eventually becomes integrated in our ongoing relationship with ourselves.

Despite the definition provided above, the discussion around the definition of the mindfulness construct continues (Baer, 2011; Grossman & Van Dam, 2011). This ongoing debate has been reflected in the various scales that have been constructed to measure level of mindfulness, some of which conceptualize the construct of mindfulness as one component, to another while another breaks down the construct into five components. In the next section, I will describe the four most commonly used scales and the definitions to which they ascribe. In addition, I will include a variation of one of the measures that has been modified for use with adolescents, as well as a newly developed scale specifically for children and adolescents. The scales that will be described below are: The Philadelphia Mindfulness Scale (PHMLS; Cardaciotto, Herbert, Forman, Moitra, & Farrow, 2008), Mindful Attention Awareness Scale (MAAS; K. W. Brown & Ryan, 2003) and the modified version for adolescents (MAAS-A; K. Brown, A. West, T. Loverich, & G. Biegel, 2011), Five Factor Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), Freiburg Mindfulness Inventory (FMI; Walach, Buchheld, Buttenmuller, Kleinknecht, & Schmidt, 2006) and the Child and Adolescent Mindfulness Measure (CAMM; Greco, Baer, & Smith, 2011).

Measures of Mindfulness

The scale which best operationalizes the two component model of mindfulness is the Philadelphia Mindfulness Scale. The Philadelphia Mindfulness Scale (PHLMS; Cardaciotto et

al., 2008) is a 2-factor scale that measures the mindfulness components of awareness and acceptance. *Awareness* is defined as a continuous monitoring of experience (Deikman, 1996) during which time the individual is not preoccupied with past or future events (Roemer & Orsillo, 2003). ***Acceptance***, the second component, is defined as ‘‘experiencing events fully and without defense, as they are’’ (Hayes, 1994). While experiencing these events, one remains open without making a value judgment on the experience (Cardaciotto et al., 2008). This scale conceptualizes mindfulness as, ‘‘a tendency to be highly aware of one’s internal and external experiences in the context of an accepting, nonjudgmental stance toward those experiences’’ (Cardaciotto et al., 2008, p. 205).

A scale which describes mindfulness as a unidimensional construct is the Mindful Attention Awareness Scale (MAAS; K. W. Brown & Ryan, 2003). This scale measures only the *awareness* component of mindfulness, defined as present-centered attention-awareness. The 15 items in this scale exclusively measure how attentive one is in the present moment, and do not assess the dimension of attitude or orientation to experience at all, adopting the rationale that the construct of acceptance is subsumed under that of awareness (K. W. Brown & Ryan, 2004). However, there continues to be some debate about whether it in actuality fully assesses the construct of mindfulness, and for this reason, the MAAS has come under recent scholarly scrutiny (Grossman, 2010b).

Recently, there has been some question as to the appropriateness of using the MAAS with adolescents, since one of the items in the MAAS scale utilizes the concept of driving, i.e. “I drive places on ‘automatic pilot’ and then wonder why I went there” (K. W. Brown & Ryan, 2003). Since this item is not applicable to all adolescents, this scale was modified for this age

group by eliminating that item, and then validating the measure with the remaining 14 items (K. Brown et al., 2011). The new scale, a modification of the MAAS, is called the MAAS-A.

The Freiburg Mindfulness Inventory (FMI; Walach et al., 2006) is a 30-item mindfulness scale which is similar in scope to the MAAS. It defines mindfulness as "the moment-to-moment attentional, unbiased observation of any phenomenon in order to perceive and to experience how it truly is, absent of emotional or intellectual distortion" (Buchheld, Grossman, & Walach, 2001, p. 12). The FMI was created to assess mindfulness in those who have had previous experience in mindfulness meditation, and the terms used in the scale may be misconstrued by those not familiar with meditation. For this reason, it is limited in its ability to be used in empirical studies.

The Five Factor Mindfulness Questionnaire (FFMQ; Baer et al., 2006), on the other hand, depicts the construct of mindfulness by outlining five components or factors, that emerged from a factor analysis of pooling items from five different mindfulness scales. The five factors that emerged in this process included *observing, describing, acting with awareness, nonjudging*, and *nonreacting*. Scores for this scale are provided not in a summation score, but rather by scoring each factor separately. Although this scale may appear to be more comprehensive than that of the MAAS or PHLMS in that it addresses five different dimensions of mindfulness, there is some question as to how independent these components are from one another. For example, factor analysis of the 39 items of this scale can be interpreted to indicate that four of the factors (all but observing) may be considered as one construct (Cardaciotto et al., 2008). Thus, teasing apart the component of the construct of mindfulness and establishing an agreed-upon definition is not an easy task.

Finally, the Child and Adolescent Mindfulness Measure has been recently developed specifically for assessing mindfulness in children and adolescents (CAMM; Greco et al., 2011).

As the aforementioned scales have not been validated for children and adolescents, and there is some question as to the applicability of both the content and vocabulary of items of these scales for a younger population, the CAMM was developed to assess mindfulness skills such as present-centered awareness and nonjudgment towards one's inner experience for youth over age 9 (Greco et al., 2011). Although initially items mirrored three factors from an adult scale including *observing thoughts, feelings and sensations*; *acting with awareness*, and *accepting without judgment*, factor analysis resulted in a single factor scale solution. This suggests the possibility that the *acting with awareness* and *accepting without judgment* components of mindfulness may be less distinct in youth than in adults (Greco et al., 2011).

Having thoroughly reviewed the various conceptualizations of the construct of mindfulness as it is understood by researchers in the field, the definition that will be used in the proposed study is one which is widely used in empirical studies, and is similar to that presented at the onset of this discussion, "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally''(Kabat-Zinn, 1994, p. 4). This definition encompasses the component of mindfulness that addresses awareness and attention as well as the component that focuses on acceptance of one's experience.

Descriptive Data

Due to the fact that a number of scales have been used to assess mindfulness, it would be meaningless to compare descriptive data across samples which use different scales. For this reason, I will address the descriptive data assessing mindfulness from each scale separately.

Mindful attention awareness scale (MAAS). In its initial validation, one study compared a sample of active Zen meditation practitioners to non-meditators (K. W. Brown & Ryan, 2003). The two groups were matched on all demographic variables. The Zen meditators

scored significantly higher on the MAAS than the non-meditators; moreover, the number of years of experience practicing Zen meditation correlated positively with higher mindfulness scores.

In another study which was used to validate the MAAS scale, 41 patients with stage 0, 1, or 2 breast or prostate cancer filled out mindfulness measures before and after a mindfulness intervention (M_{age} = 55.31, SD = 10.02). This mindfulness intervention was based on the Mindfulness Based Stress Reduction (MBSR) 8-week program, developed by Jon Kabat-Zinn, which has been the standard intervention program used in many empirical studies. The classes meet weekly for about 2 ½ hours, with an extended day of meditation between the 6th and 7th weeks. Weekly sessions include theoretical and didactic lessons about mindfulness and stress, experiential practice of mindfulness techniques which generate increased attention and awareness, and group process related to obstacles and challenges in implementing the techniques (Kabat-Zinn, 1990). In this study in which the weekly sessions were shortened to 90 minutes and the day of meditation shortened to 3 hours to accommodate the needs of the sample, no significant changes were reported pre- and post- intervention; however, it should be noted that mindfulness scores for this sample were quite high initially, comparable to that of the Zen practitioners in the aforementioned study. The authors speculated that it is possible that dealing with the reality of cancer on a daily basis may make one more aware of each moment since the reality of death is most likely more present in one's mind (K. W. Brown & Ryan, 2003).

A mindfulness intervention group receiving an 8-week MBSR class and a control group receiving a research methods and psychological theory class (M_{age} = 29.2, SD = 9.07) were created from a group of 54 masters level counseling students (Shapiro et al., 2007) most of whom self-identified as White/Caucasian. Intervention and control groups filled out pre-and

post- intervention MAAS scales. Both between group and within group comparisons indicated that the mindfulness intervention promoted a greater sense of awareness. In addition, a number of studies were conducted using the MAAS with samples of undergraduates. These samples varied widely in mindfulness scores (K. W. Brown & Ryan, 2003; Weinstein, Brown, & Ryan, 2009). Furthermore, Dakwar, Mariani and Levin (2011) conducted a study exploring baseline levels of mindfulness in substance abusers, and found that those who abused several substances (poly-drug users) had lower scores than those who abused only one substance (mono-drug users), who in turn had lower scores than the general population. Surprisingly, however, those who were opiate users had higher scores than the general population; no specific explanation was offered for this, other than that the number or kind of drugs abused may have some correlation with mindfulness level (Dakwar et al., 2011).

Mindful attention awareness scale- adolescents (MAAS- A). This modified scale for adolescents (MAAS-A) was distributed to 595 healthy adolescents (M_{age} = 16.73, SD = 1.18) who were mostly Caucasian. Males scored slightly higher than females, indicating that they were somewhat more mindful. The MAAS-A scale was then completed by 102 adolescent psychiatric outpatients (M_{age} = 15.35, SD = 1.20) who were predominantly female with a somewhat more diverse ethnicity. Most of the participants were diagnosed with mood disorders or anxiety disorders; adjustment disorders and substance abuse were diagnosed in many of the participants as well. Most of the adolescents were also diagnosed with parent-child relational problems or problems relating to abuse or neglect. Results revealed that males had a slightly higher MAAS-A score than females, indicating a higher level of mindfulness. However, the effect size was small (J. Cohen, 1988). In addition, no difference in MAAS-A scores were found for age or race/ethnicity (K. Brown, West, Loverich, & Biegel, 2011).

Freiburg mindfulness inventory (FMI). This scale was developed to measure mindfulness with individuals who were experienced in meditation. Two separate studies, one with 115 adults and the other with 85 adults, were used to validate this scale to measure mindfulness (and M_{age} = 49, range = 22-61 years; M_{age} = 43.6, SD = 9.32, respectively) before and after a mindfulness meditation retreat (Buchheld et al., 2001; Walach et al., 2006). Findings indicated that mindfulness scores increased significantly from pre- to post- retreat. Two correlational studies were conducted which utilized this scale as well; one was with 85 participants from the general population (M_{age} = 34.4, SD = 12.0) with slightly more women than men who averaged 13 years of education. The other group was composed of significantly more women than men and was a clinical sample; these individuals had an average of 10 years of education and scored significantly lower on the FMI. These results are consistent with that of Brown, West, Loverich and Biegel (2011) who also found that a clinical population scored significantly lower than a non-clinical population on a mindfulness scale.

Five factor mindfulness questionnaire (FFMQ). Results from five different samples will be provided in this section; four are from correlational studies (Baer et al., 2008), and one is from an intervention study (Carmody, Baer, Lykins, & Olendzki, 2009). The five samples that are being compared are: regular meditators (M_{age} = 48.8; SD = 12.9; $M_{years\ of\ ed}$ = 18.3, SD = 1.8), non-meditators (M_{age} = 44.2; SD = 11.9; $M_{years\ of\ ed}$ = 18.2, SD = 1.8), a community sample from the UK (M_{age} = 49.5; SD = 6.7; $M_{years\ of\ ed}$ = 12.9, SD = 3.2), non-meditating students (M_{age} = 18.9; SD = 13.2; $M_{years\ of\ ed}$ = 13.4, SD = 0.8), and adults enrolled in an MBSR class who exhibited a range of conditions including illness related stress, chronic pain, anxiety, and personal and employment related stress (M_{age} = 49.5; SD = 11.36). In this last sample, I will be providing scores for both pre- and post- intervention. As expected, the meditators had the highest

scores on four out of the five dimensions of mindfulness, the fifth (acting with awareness) being a non-significant difference. The next highest scores overall were indicated by the MBSR attendees who provided data *after* they attended the MBSR class. Moreover, the change in mindfulness from pre- to post- intervention in the MBSR attendees group is significant for each of the five factors in the scale; effect sizes ranged from medium to large. Taken together, these two results provide evidence for the influence of mindfulness on the five factors of the scale. Non-meditators, who had a similar level of education as the meditator group and significantly higher level of mindfulness than the UK sample and student non-mediators (years of education for MBSR attendees was not available) had the next highest overall level of mindfulness scores. It is plausible that amount of education may have something to do with degree of baseline mindfulness; this needs to be further explored in future studies. Scores for the UK community sample, student non-meditators, and MBSR attendees pre-intervention were relatively similar across all five factors.

Philadelphia mindfulness scale (PHLMS). Four studies were described in the validation of this scale which will be discussed below.

In the first study, 559 university students (M_{age}= 20.12; range 17-53) with mixed ethnicity completed the scale; this sample of students was used as the basis of comparison for the studies that follow. In the second study, 52 clinical patients (M_{age} = 40.78; SD = 12.04) also with somewhat mixed ethnicity completed the PHLMS. The majority of these patients had been diagnosed with a mood disorder; others had been diagnosed with a psychotic disturbance, anxiety, or a substance-related problem. This population differed significantly in both age and ethnicity from the students, and scored significantly lower on the acceptance subscale, but not on the awareness subscale.

A third study was comprised of 30 patients with eating disorders (M_{age} = 30.0; SD = 10.6) who were recruited from an eating disorder clinic. Ninety percent of this group of 27 females and 3 males (M_{age} = 30.0; SD = 10.6) self-identified as White/Caucasian. There were demographic differences pertaining to gender, race, and age between this sample and that of the students; the eating disorders sample was older, comprised of a higher percentage of females and of those who self-identified as White/Caucasian. There was not a significant difference between the two samples on the awareness subscale; however, on the acceptance subscale, there was a significant difference in that the eating disorders sample exhibiting lower levels of acceptance. This is consistent with the previous finding of those who are diagnosed with a clinical disorder showing lower levels of acceptance (Cardaciotto et al., 2008).

Seventy-eight graduate students seeking counseling (M_{age} = 25.5; SD = 7.77) comprised the sample in the fourth study. Slightly more than half of the students self-identified as White/Caucasian, and the rest were of mixed ethnicity. No information was provided comparing the significance of the difference between this sample and the others; however, upon further analysis, it appears that the mean for this sample on the acceptance subscale is closer to that of the initial student sample than that of the clinical and eating disorder samples.

In summary, when inspecting the data across samples using various mindfulness scales, there is some evidence that those diagnosed with clinical disorders or struggling with emotional challenges or substance abuse have lower baseline levels of mindfulness. In the next section, the direct effect of mindfulness on emotional well-being outcomes will be discussed. Demonstrating the significance of this direct effect is the first step in establishing conditions necessary for mediation (Baron & Kenny, 1986). Studies with adult samples will be described first, since this

is what has been most extensively researched, followed by the burgeoning research on the influence of mindfulness interventions with adolescents.

Mindfulness Studies in Adult Samples

Several recent reviews and meta-analyses have reported significant effects of level of mindfulness on outcomes pertaining to both physical and mental health in both clinical and non-clinical adult samples (Baer, 2003; Greeson, 2009; Grossman et al., 2004; Hofmann, Sawyer, Witt, & Oh, 2010; Ivanovski & Malhi, 2007; Keng, Smoski, & Robins, 2011). Reviewed were mindfulness studies that included both physical (i.e. pain, extent of discomfort) and psychological/emotional outcomes (i.e. anxiety, depression). The most recent review cited cross-sectional research in addition to intervention studies (Keng et al., 2011). Since cross-sectional research is more relevant to the proposed study, it will be discussed first, followed by a summary of the results of intervention studies.

Inspection of cross-sectional studies which utilized mindfulness measures indicates significant correlations between mindfulness and psychological well-being. Specifically, attributes of psychological well-being include positive associations with agreeableness (Thompson & Waltz, 2007), conscientiousness (Giluk, 2009; Thompson & Waltz, 2007), self-esteem (K. W. Brown & Ryan, 2003; Rasmussen & Pidgeon, 2011), overall sense of well-being (Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007; Lau et al., 2006; Sauer, Walach, & Kohls, 2011), empathy (Dekeyser, Raes, Leijssen, Leysen, & Dewulf, 2008), positive affect (K. W. Brown & Ryan, 2003; Waters et al., 2009), levels of life satisfaction, vitality, sense of autonomy, competence, optimism (K. W. Brown & Ryan, 2003), and overall psychological functioning (Cho, Heiby, McCracken, Lee, & Moon, 2010). Furthermore, negative correlations were reported in relation to depressive symptoms (K. W. Brown & Ryan, 2003; Cardaciotto et

al., 2008; Cash & Whittingham, 2010; Jimenez, Niles, & Park, 2010; Waters et al., 2009), psychological distress (Coffey & Hartman, 2008; Feldman et al., 2007), neuroticism (Dekeyser et al., 2008; Giluk, 2009), absentmindedness (Herndon, 2008), dissociation (Baer et al., 2006; Walach et al., 2006), rumination (Cardaciotto et al., 2008; Feldman et al., 2007; Raes & Williams, 2010), cognitive reactivity (Raes, Dewulf, Van Heeringen, & Williams, 2009), social anxiety (K. W. Brown & Ryan, 2003; Dekeyser et al., 2008; Rasmussen & Pidgeon, 2011), intensity of delusional experience in the context of psychosis (Chadwick et al., 2008), experiential avoidance (Baer, Smith, & Allen, 2004; Feldman et al., 2007), alexithymia (Baer et al., 2004), difficulties in emotional regulation (Baer et al., 2006; Feldman et al., 2007), negative affect and perceived stress (Waters et al., 2009), and general psychological ill-health (Baer et al., 2006; Masuda, Wendell, Chou, & Feinstein, 2010). Moreover, research suggests that the greater emotional regulation found in mindful individuals occurs through an increased awareness and acceptance of emotions (Baer et al., 2008; Feldman et al., 2007). This ability to regulate one's emotions may predict positive emotional well-being long-term (Greeson, 2009).

A number of reviews have focused on intervention studies. Although the proposed study does not encompass an intervention, the findings of these studies inform the proposed study by both mirroring the results of the correlational studies, as well as offering support that mindfulness interventions can raise level of mindfulness, which then positively impacts the relationship between mindfulness and dimensions of emotional well-being. These studies will be discussed below.

In one review (Baer, 2003) and a meta-analysis (Grossman et al., 2004), most of the studies included used the 8-10 week Mindfulness Based Stress Reduction (MBSR) program (Kabat-Zinn, 1982, 1990) or a variation of this program designed to accommodate the specific

needs of the population being addressed, e.g., Mindfulness Based Cognitive Therapy for depression (Segal, Williams, & Teasdale, 2002; Teasdale, Segal, & Williams, 1995; Teasdale, Williams, Soulsby, & Segal, 2000). Another review included a variety of different kinds of meditation and focused on neurophysiological confirmations of meditation (Ivanovski & Malhi, 2007). Greeson (2009) reviewed the effects of mindfulness on the mind, brain, body and behavior, and Hofman and colleagues (2010) focused on clinical studies that addressed anxiety and depression.

Despite the differences in focus of the meta-analysis and reviews, overall findings were remarkably consistent. Reported were significant improvements in ratings of chronic pain (Kabat-Zinn, Lipworth, & Burney, 1985; Kabat-Zinn, Lipworth, Burney, & Sellers, 1987), and other stress-related medical conditions such as fibromyalgia (Grossman, Tiefenthaler-Gilmer, Raysz, & Kesper, 2007), psoriasis (Kabat-Zinn et al., 1998), Type 2 diabetes (Rosenzweig et al., 2007), rheumatoid arthritis (Pradhan et al., 2007; Zautra et al., 2008), chronic low back pain (Morone, Greco, & Weiner, 2008) and overall immune function (Bartsch et al., 1992; Massion, Teas, Hebert, Wertheimer, & Kabat-Zinn, 1995). Additionally, anxiety (Kabat-Zinn et al., 1992; Miller, Fletcher, & Kabat-Zinn, 1995), depression (Fincune & Mercer, 2006; Kutz et al., 1985; Teasdale, 2004), mood disturbance (Carlson, Ursuliak, Goodey, Angen, & Speca, 2001), social phobia (Boguls, Sijbers, & Voncken, 2006) and stress-level (Speca, Carlson, Goodey, & Angen, 2000) were significantly lower post-treatment in clinical and non-clinical samples and in several studies these positive outcomes were maintained at follow-up.

However, due to methodological weaknesses in many of the intervention studies, results must be interpreted with caution (Baer, 2003; Grossman et al., 2004; Ivanovski & Malhi, 2007). Methodological weaknesses cited include a lack of control groups in many studies, limiting the

ability to detect the effect of passage of time, placebo effects, or comparison of a particular mindfulness intervention (i.e. MBSR) with other active treatments (i.e. yoga, cognitive therapy). Studies that used treatment-as-usual as a control differed significantly in the nature of the treatment across studies, and therefore results of these studies could not be compared among themselves (Baer, 2003). In addition, small sample sizes, integrity of treatment, and quality of mindfulness instructor (Baer, 2003; Grossman et al., 2004) were also methodological weaknesses that warrant attention. Finally, due to limited availability of follow-up data, effect sizes could usually be calculated from the immediate post-intervention measures (Grossman et al., 2004). As a result of these limitations, recommendations for future research included utilizing randomized controlled clinical trials with follow-up data points to determine lasting effects of the intervention (Grossman et al., 2004), as well as investigating broader psychological outcomes such as subjective well-being and quality of life (Baer, 2003).

The Advancement of Adolescence: Physical, Cognitive, and Psychosocial Changes

Upon noting the effects of mindfulness practice on adults in physical, psychological, and emotional domains, researchers have begun to question the potential effects that mindfulness practice might have on younger populations. During adolescence, individuals are undergoing rapid physiological changes (Blakemore, Berenbaum, & Liben, 2009; Divall & Radovick, 2008; Giedd, 2008; Susman & Dorn, 2009) including acceleration in growth of both height and weight, development of primary and secondary sex characteristics, changes in body fat and muscle composition, changes in circulatory and respiratory systems (Marshall, 1978) and changes in both structure and function of the brain (Giedd, 2008). Coupled with these changes are new cognitive abilities including the capacity for metacognition and thinking abstractly that promote adolescents' increasingly complex and sophisticated ways of relating to their world (Keating,

2004). Taken together, these changes could have dramatic effects on the way in which adolescents perceive, understand, and interpret their daily experiences, particularly those that intersect with social and emotional domains.

Since adolescents are able to think more in possibilities and relativities than when they were younger, they may question social conventions or morals which have been promulgated by their parents and to which they had previously ascribed, opting instead to think critically about these ideas, and may begin to formulate their own beliefs and values (Marcia, 1980). In another illustration of adolescent developmental changes affecting behavior, recent developments in the field of neuroscience have revealed that two neural networks "compete" for dominance in adolescence, that of the socioemotional network and the cognitive-control network (Steinberg, 2007). The former is sensitive to external social and emotional stimuli and has a sudden growth spurt in early adolescence. It takes place in the limbic area of the brain, governed by parts of the brain responsible for emotional arousal (e.g., amygdala). The latter, the cognitive-control network, is located on the more external areas of the brain that are responsible for planning, thinking ahead, and self-regulation (e.g., prefrontal cortex). This network matures gradually throughout adolescence and does not achieve full maturity until early adulthood (Steinberg, 2004, 2007). Thus, the lack of physiological maturity of the cognitive-control network in comparison to that of the socioemotional network during adolescence may be partly responsible for risk-taking behavior that may take place during this period (Drevets & Raichle, 1998). By early adulthood, these two neural networks are once again in balance, and the cognitive-control network can then override the socioemotional network, modulating the decision to engage in risky behaviors (Steinberg, 2007).

If mindfulness functions in the same way in adolescents as it does in adults, it would be expected that adolescents will also experience reduced depression, anxiety, and stress and possess more effective coping skills than they had previously acquired. This issue will be explored in the next section, in which mindfulness studies that have been conducted with adolescent samples will be presented. The focus will be on the ways in which mindfulness can interact with adolescent development and impact emotional well-being, defined in this study as positive and negative affect, perceived stress, and life satisfaction. These constructs were used to define emotional well-being because of their use in other mindfulness research, facilitating comparison of results, and because of the availability of measures for these constructs that have been validated for adolescents.

Mindfulness Studies with Adolescents

Most of the studies that have been conducted with adolescent samples are intervention based in design. Although the proposed study is not an intervention based design, it is informed by the findings from the intervention studies. These findings are discussed in a recent review of 15 mindfulness studies which used samples of adolescents and children (Burke, 2010). Overall, the findings in the review mirrored those found in adult studies and in particular, demonstrated an increase in mindfulness and positive emotional well-being outcomes, suggesting that mindfulness interventions may raise the level of mindfulness which in turn influences the positive relationship between mindfulness and dimensions of emotional well-being. This is the direct relationship posited in this study. These studies, as well as correlational studies and studies that have been published since the review, will be discussed below. The correlational studies will be reviewed first, followed with a discussion of the intervention studies; the latter will be organized by outcome.

In the validation of the MAAS-A scale, correlational studies were conducted with both clinical and normative adolescent samples. Findings indicated that higher MAAS-A scores indicating higher levels of mindfulness were positively associated with greater life satisfaction, happiness, positive affect, self-regulation, and wellness, and negatively associated with negative affect and tendency to use substances as a coping mechanism (K. Brown et al., 2011). Furthermore, mindfulness scores correlated positively with the Big Five personality traits of agreeableness, conscientiousness, and openness to experience, and correlated negatively with the Big Five trait of neuroticism, which has been related to poorer well-being (Diener, Suh, Lucas, & Smith, 1999). Confirming these findings, correlation studies which utilized the CAMM scale indicated that mindfulness was positively associated with overall quality of life and negatively associated with internalizing and externalizing problem behaviors in a sample of 5th through 10th grade students (Greco et al., 2011).

In relation to positive and negative affect, research incorporating mindfulness interventions with adolescents has reported a decrease in negative affect and increase in positive affect (Broderick & Metz, 2009; Ciarrochi et al., 2010; Schonert-Reichl & Lawlor, 2010). Positive affect is defined as "the extent to which a person feels enthusiastic, active, and alert" (Watson et al., 1988, p. 1063). Negative affect is defined as "a general dimension of subjective distress and unpleasurable engagement that subsumes a variety of aversive mood states, that includes anger, contempt, disgust, guilt, fear and nervousness" (Watson et al., 1988, p. 1063). In general, positive and negative affect are considered mood factors, which relate to self-reported stress and difficulty coping and positive social interactions and frequency of pleasant events (Watson et al., 1988).

Anxiety and depression affect mood and can lead to a maladaptive trajectory which may include problems with substance abuse, school delinquency, and isolation from peers (Middlebrooks & Audage, 2008). For these reasons, these factors are frequently assessed in mindfulness intervention studies. A decrease in self-reported anxiety was observed post-intervention with 34 learning disabled adolescents and clinically-referred adolescents (Beauchemin, Hutchins, & Paterson, 2008; Biegel et al., 2009; K. Brown et al., 2011). Depression also decreased post-intervention in a clinical sample (Biegel et al., 2009) as well as rumination in 4th and 5th grade public school students (Mendelson et al., 2010). Rumination, described as an excessive pondering about the reasons that one feels sad, the possible causes of the sadness, and the "inevitable" implications of it (Nolen-Hoecksema, 1991; Raes & Williams, 2010) have been linked to prolonging depressive states (Nolen-Hoecksema & Morrow, 1991), and lower dispositional mindfulness (Raes & Williams, 2010).

Sleep quality, amount of sleep, and overall sleepiness, are related factors which are associated with increased substance abuse (Bootzin & Stevens, 2005; Britton et al., 2010), as well as anxiety, depression, and lower self-esteem in adolescents (Gregory et al., 2005; Patten, Choi, Gillin, & Pierce, 2000; Roberts, Roberts, & Chen, 2002; Roberts, Roberts, & Duong, 2008). These factors were shown to improve post-mindfulness training in two studies, one that addressed a sample of clinically-referred adolescents and the other that taught mindfulness practice to adolescents that had recently completed a substance abuse program (Biegel et al., 2009; Britton et al., 2010). In addition, both self-esteem and self-efficacy were shown to increase with the same two adolescent populations (Biegel et al., 2009; Britton et al., 2010).

Related to the emotional states of anxiety, depression, and mood, perceived stress was directly measured in two studies. Findings indicated that mindfulness correlated negatively with

perceived stress in one study (K. Brown et al., 2011), and decreased following a mindfulness intervention with clinic-referred adolescents in another study (Biegel et al., 2009). Directly measuring perceived stress in future studies may contribute to understanding the association between mindfulness and emotional well-being outcomes in adolescents.

Moreover, global life satisfaction, defined as an overall judgment of one's life (Diener, 1994) is considered one element in the tripartite model of subjective well-being, the other two being positive and negative affect (Campbell, Converse, & Rodgers, 1976; Diener, 1994). Other than the correlational study discussed earlier, no studies were found that directly measured life satisfaction in adolescents, and only one study was found that directly measured overall well-being. This study found significantly improved overall well-being in adolescent boys in a British private school after a 4-week mindfulness intervention (Huppert & Johnson, 2010).

In the next section, we will transition from investigating the direct effects of mindfulness on dimensions of emotional well-being to exploring the ways in which these effects may occur; that is, we will be investigating the mechanisms, or mediators, through which mindfulness is linked to dimensions of emotional well-being.

Mechanisms of Mindfulness: Potential Mediators

The first order questions initially posed by early researchers almost 30 years ago who were interested in investigating the effects of mindfulness were: Does mindfulness practice work? If so, how effective is it? (Shapiro et al., 2006). In the intervening years between then and now, there has been an abundance of empirical studies which have reported salutatory outcomes in both the psychological and physical domains (see Baer, 2003; Bishop et al., 2004; Grossman et al., 2004). The second-order question begging exploration at this point in time is: *How* does mindfulness work? What are the mechanisms through which mindfulness effects change? What

aspect or component of mindfulness is promoting the positive changes that are occurring? Is it being more attentive or aware in the moment, or is it in an acceptance of the conditions affecting oneself in a given moment that is responsible for creating what Singh and colleagues refer to as a *transformational change* (2010) or Shapiro and colleagues term *reperceiving* (2006)?

A number of mechanisms of change have been explored in recent empirical studies, and include the change in the level of the mindfulness state itself, decentering, psychological flexibility, values, emotion regulation, spirituality, changes in the brain, changes in attention and working memory, and self-compassion (Baer, 2010a). Level of mindfulness, emotion regulation and self-compassion will be discussed briefly in the next section, as these are the mechanisms that are most relevant to the proposed study.

Mindfulness level. *Mindfulness* has been described as a state or trait in which an individual is aware and attentive in the moment. Mindfulness may include characteristics such as acceptance, awareness, or both, depending on the definition to which one chooses to adhere (Bishop et al., 2004; Grossman, 2008). Various measures have been developed recently to attempt to measure an individual's level of mindfulness, including the MAAS (K. W. Brown & Ryan, 2003), PHLMS (Cardaciotto et al., 2008), FFMQ (Baer et al., 2006) , and FMI (Walach et al., 2006).

To then explore the role of mindfulness in influencing dimensions of emotional well-being, Baer and colleagues (2008) investigated the relationships between amount of mindfulness practice, self-reported mindfulness, and well-being outcomes in a sample of 176 well-educated adults who had been practicing meditation for an average of 7 years ($M_{age} = 49$; 68% women). Correlational findings indicated that amount of meditation practice (measured in months of meditation experience) was positively associated with level of mindfulness (measured by the

FFMQ) and also with well-being scores. Moreover, three of the factors of the FFMQ (describing, non-judging of inner experience, and nonreactivity to inner experience) were significant mediators of the relationship between length of meditation experience and psychological well-being (Baer et al., 2008). Thus, length of meditation practice experience is associated with an increased ability to describe and label one's emotions in the moment, and furthermore, to not judge oneself or be reactive in relation to them.

Emotion regulation. Gratz and Roemer (2004) have conceptualized emotion regulation as "a multidimensional construct involving the awareness, understanding, and acceptance of emotions; ability to engage in goal-directed behaviors and inhibit impulsive behaviors when experiencing negative emotions; flexible use of situationally appropriate strategies to modulate the intensity or duration of emotional responses, rather than to eliminate emotions entirely and willingness to experience negative emotions as part of pursuing meaningful activities in life" (Gratz & Tull, 2010, p. 111) . It is important to note that emotion regulation, as it is defined by Gratz and Roemer, does not refer to the controlling or suppression of negative emotions, as this would assume that there are some emotions that are inherently "bad". This is in diametric opposition to the theoretical understanding of mindfulness which supports the understanding that emotions are fleeting, exist separately from thoughts and sensations, and are neither good nor bad, but simply an element present in our human experience.

Several studies have investigated the role of emotion regulation as a mediator in the relationship between mindfulness and improved psychological outcomes. A study which incorporated a 10-week mindfulness-based cognitive behavioral group was conducted with 7 participants (M_{age} = 54, range is 49 to 64; 6 women, 1 man) with eating disorders (Leahey, Crowther, & Irwin, 2008). A goal of this study was to bring awareness to emotions that

prompted binge eating. Findings indicated that all dimensions of emotion regulation difficulties improved, as assessed by the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). Moreover, binge eating decreased from clinical to non-clinical levels.

A second study implemented a 14-week acceptance-based emotion group therapy for women with borderline personality disorder who were also exhibiting self-harming behaviors (M_{age} = 33.0, SD = 12.47 for intervention group; M_{age} = 33.7, SD = 12.56 for control group) (Gratz & Gunderson, 2006). The goal of this group was for the participants to investigate the function of the self-harming behavior in which they were engaged, and without judgment, to explore the emotions behind the behavior. A control group was also included in this study; this group continued with their current outpatient treatment, which consisted of at least one hour of therapy per week; the control group did not receive the group therapy. Findings indicated that there were significant differences in the outcomes between the two groups; effect sizes were in the large range. Patients who received the group therapy exhibited improvements in all outcome measures and 83% were functioning in the normative range on the specific behaviors that had been targeted in this intervention. This supports the conclusion that mindfulness and acceptance were associated with an increase in emotion regulation functioning which was then related to improved outcome behaviors.

Self-compassion. Self-compassion, as defined by Neff (2003b) is a construct that encompasses three main components: self-kindness or not judging oneself harshly, recognition that we are part of a common humanity, and not grasping (i.e. overidentifying) or pushing away one's thoughts or feelings. Self-compassion is very different than self-centeredness and should not be confused with it; self-compassion is based on the notion that we are part of a common humanity, and as such, we are necessarily aware of the suffering and needs of others (Baer,

2010b). Therefore, by definition, self-centeredness cannot exist concurrently with self-compassion. For similar reasons, self-compassion is not to be confused with self-esteem, which involves a comparison of one's abilities with those of others, resulting in an evaluation or judgment about where one stands in the social hierarchy (Neff & Vonk, 2008). In contrast, self-compassion involves a linking or fundamental connection with others through an understanding of our common humanity (Neff, 2003b). Self-compassion is assessed through the Self-Compassion Scale (SCS; Neff, 2003a), a scale that taps the three dimensions of self compassion: self-kindness, common humanity, and mindfulness.

In a standard 8-week MBSR intervention study that taught mindfulness exercises to health-care professionals (Shapiro, Astin, Bishop, & Cordova, 2005), participants (age 18-65) were randomized to either the intervention group or a wait-list control group. Results indicated that participants in the intervention group showed significant increases in self-compassion and decreases in perceived stress over the course of the intervention whereas the control group did not demonstrate similar changes. One way to understand these results is that by becoming more self-compassionate and more accepting of themselves, the participants were able to decrease their level of perceived stress. In another intervention study (Shapiro et al., 2007), therapists in training in a masters counseling program (M_{age} = 29.2 years, SD = 9.07) were given the 8-week MBSR program. Participants in the program showed significant increases in self-compassion, mindfulness, and positive affect, and significant decreases in perceived stress, negative affect, anxiety and rumination. These results were not found in the control group. The amount of change in mindfulness correlated with the amount of change in self-compassion, perceived stress, rumination, and anxiety in the MBSR group.

First year trainees in a clinical psychology program (no age data available) were introduced to a modified version of the MBSR program (Moore, 2008). This group met for 14 sessions over their lunch period in a one month period. Findings indicated an increase in the self-kindness subscale of the self-compassion measure, but not in the other two subscales of this measure. Mindfulness increased slightly, and perceived stress did not change. However, this was a small sample (10 participants), and the sessions were not conducted by an experienced mindfulness teacher, but rather mindfulness exercises were read by one of the participants in the group with no follow-up discussion. The need for an experienced mindfulness teacher to lead the intervention has been reported to be an essential element to an effective mindfulness program (Grossman, 2008).

Finally, if mindfulness interventions promote increases in self-compassion, then one would expect individuals who have a history of mindfulness practice to be more self-compassionate. In two studies comparing long-term practitioners to those who are novices to mindfulness practice (Lykins & Baer: $M_{\text{age of non-med}} = 43.2$, SD = 12, $M_{\text{age of med}} = 49.6$, SD = 11.3; Neff: $M_{\text{age}} = 47.0$; SD = 9.71), this was found to be the case (Lykins & Baer, 2009; Neff, 2003a).

Only one study has explored self-compassion in adolescents and this cross-sectional study did not measure mindfulness (Neff & McGehee, 2010). Nonetheless, in a sample of 235 adolescents ($M_{\text{age}} = 15.2$, range 14-17) self-compassion was reported to correlate negatively with measures of depression and anxiety, and positively with connectedness (a construct which articulates how strongly an individual feels connected to others). Moreover, maternal support, positive family functioning, and secure attachment were shown to be predictors of self-compassion in adolescents. Personal fable, the phenomenon often found in adolescents which describes the sense that adolescents have that they are unique was also a predictor of self-

compassion, with greater ego-centrism shown to be linked to less self-compassion. Finally, self-compassion was reported to partially mediate the relationship between family functioning variables (i.e., maternal support, family functioning, attachment, personal fable) and well-being (i.e., depression, anxiety, connectedness). In other words, the mechanism through which positive family functioning impacts adolescents' well-being is through self-compassion. Thus, it appears that an adolescent learns to be self-compassionate because she has received maternal support and lived in a healthy family atmosphere; this has consequently resulted in her improved sense of well-being.

It has been established that acceptance of the present moment and that which is encompassed within it is an integral component of mindfulness and mindfulness differs in healthy individuals contrasted to those diagnosed with a clinical problem. It is therefore plausible to conclude that it is this component of acceptance which is the determining factor influencing emotional well-being. Acceptance of the present moment and nonjudging also extends to oneself, since as individuals experiencing the present moment, we are an integral part of it. Moreover, recognizing that adolescents are often engaged with social comparison, determining their place in the social hierarchy, (B. Brown & Lohr, 1987; Harter, 1990) and frequent negative self-judgment (Harter, 1993; Simmons et al., 1973), one would imagine that a practice which fosters self-acceptance would cause a significant shift in self-perception. One can then suggest that acceptance of oneself without criticism or judgment is not only closely linked to self-compassion, but is in fact, one of the three components of it (Neff & McGehee, 2010). Thus, it is reasonable to assume that mindfulness, characterized primarily by the component of acceptance, may predict self-compassion, which in turn predicts emotional well-being in adolescents. Consequently, I have chosen to test self-compassion as a mediator, and I conclude

this section by offering the hypothesis of the proposed study: Mindfulness directly correlates with emotional well-being in adolescents, and self-compassion partially mediates the relationship between these two variables.

Chapter 3 - Method

Sample

Participants were recruited from a population of 9-12 grade high school students in one public high school. To be able to generalize results across different socioeconomic groups, a school with a diverse socioeconomic student population served as the target school. The racial/ethnic composition of the students was 67.3% White, 25.3% African American, 1.3% Asian/Pacific Islander, 5.7% Hispanic, 0.4% Native American/Alaskan. In addition, 44.2% of students attending the school were classified as economically disadvantaged, based on whether they were receiving free or reduced lunch. Males comprised 50.8% of the student population, and females comprised 49.2%. The sample population of this study was somewhat less racially/ethnically diverse than the population of the school, and proportionally there were more females who participated in the study than males (see Table 1).

Permission was first requested from the school district, and subsequently from the principal of the high school, through completing and submitting a district required proposal. Following this, all 1201 students who took English classes were eligible to participate in this study.

Procedure

A packet was handed out to all 1201 students in their English classes which included a letter of introduction explaining the study (Appendix A), a consent form for parents to sign and return to school (Appendix B), and an assent form for students to sign and return to school (Appendix C). Students initially had one week to return the signed forms to school and deposit them in locked boxes which were placed in the main office and guidance office. As an incentive

Table 1

Descriptive Data for Demographics of Sample ($N = 65$)

Variables	Percentage of total	
Gender		
male	41.8	
female	58.2	
Age		
14-15	40.3	
16-18	59.7	
Education level of parents	Mother	Father
Less than high school	3.0	3.0
High school graduate	10.4	14.9
Some college	17.9	10.4
College degree	29.9	34.3
Master's degree	25.4	13.4
Doctorate or professional degree	13.4	20.9
No answer		3.0
Race/Ethnicity		
Black	11.9	
White	73.1	
Asian	1.5	
American Indian	1.5	
Hispanic/Latino	3.0	

Other	9.0
Number of computers in household	
0-1	15.2
2-3	50.7
4-5	22.4
6 or more	10.5
Number of vacations in last year	
0	17.9
1	29.9
2	26.9
3-4	23.9
No answer	1.5
Number of cars in household	
0	1.5
1	10.4
2	32.8
3	40.3
4	10.4
5-7	4.5

to encourage students to participate in the study, all student participants were entered in a drawing for an Ipad 2. This incentive was selected after discussions with school administrators, high school teachers, and high schools students. In an informal survey, students were asked which option would most encourage their participation in a study, one chance to win an Ipad or five chances to win $100 gift certificates. All students who responded stated that the chance to win an Ipad 2 would be a greater incentive. On the day that students took home the packet, a message was sent through the email/phone message system utilized by the school alerting parents of the opportunity for their child to participate in the study (Appendix D). This is a system that allows for an identical taped message to be sent to parents' phones and also to their email addresses. In addition, an announcement was made that day over the school intercom system during morning announcements alerting students to the study. Three days later, another announcement was made reminding students to bring in their signed forms. The day before the forms were due, a third announcement was made over the school intercom system, and a reminder email/phone call was sent home to parents (Appendix E). Near the end of the week it became apparent that the response rate was very low, and on the following Monday the university IRB was contacted for approval for three requests: 1) extending the time to collect consent/assent forms by one week, 2) posting flyers at the school advertising the study, and 3) sending home an additional email/phone message to parents through the school reminding them of the opportunity to have their child participate in the study. These requests were approved the following day, and 100 flyers were then posted at the school advertising the study (Appendix F). Two days later, the response rate had not improved significantly, and after a school administrator suggested adding a cookie coupon for all participants as an additional incentive, another request was made to the IRB officer to add this incentive to the study. Revised consent and assent forms

were submitted to the IRB for approval which alerted parents and potential student participants that the first 150 students to participate in the study would receive a free cookie coupon (Appendices G and H). When this request was approved the following day, 100 additional flyers were posted at the school alerting students to the additional incentive (Appendix I) indicating that the revised consent/assent forms were available to students in the guidance office and the school library. Additionally, another email/phone message went home to parents alerting them of the added incentive and that they had an additional week to send in consent forms (Appendix J). Four days later, a final 100 flyers were posted reminding students that the survey would begin the following week (Appendix K). A final request was then made to the IRB officer to post a facebook message on the researcher's facebook page alerting facebook friends who may have had children at the school to send in consent forms. This was approved by the IRB two days later, and the facebook message was posted.

The 63 students who had submitted consent and assent forms came to the school library the following week before school, after school, or during lunch to take the online survey. The school system clearly stated that the survey could not take up classroom instructional time and, thus, completing the survey was restricted to these times. Once in the library, students were given a slip of paper with the website URL address to access the survey. When they completed the survey, they traded in the paper with the URL in exchange for the cookie coupon, and their name was checked off a list of all students who had provided consent and assent forms; this indicated that they had completed the survey. At the end of the week, it was noted that 34 students who had provided consent and assent forms had not come to the library to take the survey. These students' lunch period teachers were notified so that they could remind students to take the survey if they were still interested. Thirteen of these 34 students came to the library the

following Monday and Tuesday to take the survey. In total, 89 students, or 7.41% of the 1201 invited to participate provided consent and assent forms, and 68 students, or 5.66% of the 1201 invited to participate took the online survey.

This low response rate was not expected, and I have informally explored some of the reasons that it may have occurred. After speaking with a number of high school students and their teachers, I have concluded that there are a number of possible explanations. First, students raised in our consumer culture are inundated with opportunities to "win" prizes, and may have become jaded and inured to the process. It may be difficult for students to discern when they are being confronted with advertising luring them to spend money where the odds to win may be low, or a real opportunity to contribute to a cause which they might believe is worthwhile and their opportunity to win may be quite high. As one student explained, "We get a ton of papers every day – we just learn to ignore them." In some ways, it seems that students have developed a coping mechanism to "tune out" the flood of requests to which they would otherwise be exposed. Interestingly, when the librarian directly approached students suggesting they take part in the study, the students usually agreed to participate; it was as if until then it had not occurred to them to consider doing so.

Second, it required effort on the student's part to approach their parents and have them sign a consent form and then to fill out a survey, even one which is 10-15 minutes in length. One student remarked, "If you didn't have to get parents to sign, I would have done the survey. I kept forgetting to get them to sign it." Additionally, adolescents at this stage of development put much importance and value on peer relationships, and the times that this survey was offered competed with times when students would otherwise be with friends. One high school senior commented, "If we could get out of class to do it, it would be different. We're high school

students and have a thousand other things to do!" These two factors together may have deterred students from participating. As one student explained when asked why she thought other students did not opt to take the survey, "It's a pain, it's annoying, you have to take the papers home, get them signed, bring them back. Things are so disorganized at school. No one at the school knows what's going on when you ask." Clearly the energy required to sort through the mire of paperwork at school discouraged students from taking part in the study. When asked what *would* facilitate student participation, a student responded, "The only thing that would work was if teachers took students to the library and gave them class time to do it." Unfortunately, due to restrictions expressly outlined by the Research and Evaluation department of the school district, it was not possible to take class time to conduct the survey.

In an impromptu hallway conversation, one teacher summarized the issue around the poor response rate with the comment, "Welcome to our world." When I probed and asked what she meant by this, she said, "Students don't hand anything in. You have to practically beg them for it." Whether due to general disinterest, being overwhelmed with opportunities to "win" prizes, or simply wanting to spend their little free time with friends, clearly this low response rate is an issue that needs to be addressed in future studies with adolescents.

Data Collection.

The following measures comprised the survey that students took online.

Mindfulness. To measure students' level of mindfulness, the Children and Adolescent Mindfulness Measure (Appendix L; CAMM; Greco et al., 2011) was used. This measure assesses mindfulness skills which include both attention in the moment and acceptance of one's internal experiences. Factor analysis of this 10-item scale resulted in a one factor solution with a Cronbach's alpha of 0.80. Participants indicate their responses to each item using a 5-point

Likert-type scale ranging from 0 (*never true)* to 4 (*always true).* The total score is calculated by reverse scoring all ten items, and then summing the scores on the items. The potential range of the scores is 0-40, and higher scores indicate greater mindfulness. Examples of items on this scale include: "It's hard for me to pay attention to only one thing at a time" and "I tell myself that I shouldn't feel the way I'm feeling." Construct validity was established through positive correlations of the scores from this measures with quality of life, academic competence, and social skills and negatively correlations with somatic complaints, and internalizing and externalizing behavior problems (Greco et al., 2011).

Positive and negative affect. To measure the extent to which individuals experienced positive and negative affect over the past week, the 20-item PANAS scale was used (PANAS-Appendix M; Watson et al., 1988). The PANAS is comprised of two subscales,that of positive affect and negative affect. Positive affect is defined as "the extent to which a person feels enthusiastic, active, and alert" (Watson et al., 1988, p. 1063). Negative affect is defined as "a general dimension of subjective distress and unpleasurable engagement that subsumes a variety of aversive mood states, that includes anger, contempt, disgust, guilt, fear and nervousness" (Watson, et al., 1988, p. 1063). This scale contains 10 emotion words that assess positive emotions and 10 words that assess negative emotions. Examples of positive emotion words are *strong*, *inspired*, and *excited*. Examples of negative emotion words are *ashamed, upset*, and *afraid*. The participant is asked to indicate how much he or she has experienced each of these emotions over the past few days. Participants indicate their responses to each item using a 4-point scale ranging from 1 (*very slightly or not at all*) to 4 (*most of the time*). The total scale scores are calculated by summing the 10 PA items, and summing the 10 NA items for the total NA scale score. The potential range of values for each total scale score is from 10 – 40. Higher

scores for PA indicates higher positive affect, and higher score for NA indicates higher negative affect. The two subscales have been shown to have low correlation with each other (r = -.22), internally consistent (Cronbach's alpha = .84 to .87 for negative affect, and .86 to .90 for positive affect) and stable over a 2 month time period (r = .48 for PA, r = .42 for NA) (Watson et al., 1988). In addition, past research demonstrates evidence for convergent and discriminant validity (Watson et al., 1988).

Self-Compassion. Self-compassion was measured using the Self-Compassion Scale which is comprised of 26 items (SCS - Appendix N; Neff, 2003a). Self-compassion is defined as "the ability to hold one's feelings of suffering with a sense of warmth, connection, and concern" (Neff & McGehee, 2010, p. 226). The 6 subscales that comprise the self-compassion scale are self-kindness (5 items, e.g. "When I'm going through a very hard time, I give myself the caring and tenderness I need"); self-judgment (5 items, e.g. "I'm disapproving and judgmental about my own flaws and inadequacies"); common humanity (4 items, e.g. "When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people"); isolation (4 items, e.g. "When I fail at something that's important to me, I tend to feel alone in my failure"); mindfulness (4 items, e.g. "When something upsets me I try to keep my emotions in balance") and over-identification (4 items, e.g. "When I'm feeling down I tend to obsess and fixate on everything that's wrong"). Participants indicate their responses to each item using a 5-point scale ranging from 1 (*Almost Never)* to 5 (*Almost Always)*. For the mediational analyses in this study, the total self-compassion score was used. To compute a total self-compassion score, subscale items for self-judgment, isolation, and over-identification were reverse scored, and then all 26 items were summed and the sum was then divided by the number of items. The potential range of values for the total score is 1-5. Higher score indicates greater self-compassion. Reliability for

this scale is excellent; Cronbach's alpha = .93 (Neff, 2003a). To establish construct validity, the self-compassion scale was compared to similar established scales, and was reported to have a statistically significant negative correlation with the self-criticism subscale of the Depression Experience Questionnaire, a statistically significant positive correlation with the Social Connectedness scale, and a statistically significant positive correlation with the three subscales of the Trait-Meta Mood Scale which include attention, clarity, and repair (Neff, 2003a).

Life satisfaction. Global life satisfaction was measured using the Student's Life Satisfaction Scale (SLSS - Appendix O; Huebner, 1991). Global life satisfaction, a component of subjective well-being, refers to a judgment about one's well-being that is beyond that which is linked directly to well-being in specific domains (e.g. school, peers). Based on Diener and colleagues (1985) life satisfaction scale for adults, this scale has been validated for children age 8-14. Construct and discriminant validity were established through correlations with other well-being and affect scales, and comparisons to the correlations between similar scales in adults. Results were in the expected directions. The 7-item scale has a unidimensional factor structure, adequate temporal stability over 1-2 weeks (correlation = 0.74 with student samples from grades 4, 6, and 8), and good internal consistency (Cronbach's alpha = 0.82 with student samples from grades 4, 5, 6, and 8) (Huebner, 1991). Further validation, internal consistency and test-retest reliability over one year was established in a later study with a sample of 9^{th}, 10^{th}, 11^{th}, and 12^{th} graders (Huebner, Funk, & Gilman, 2000). Coefficient alphas of .86 (Dew & Huebner, 1994) and .84 (Gilman & Huebner, 1997) were reported in additional studies with adolescent samples. Concurrent validity was evidenced in parent reports (Dew & Huebner, 1994; Gilman & Huebner, 1997) and teacher reports (Huebner & Alderman, 1993). Examples of items include "I have a good life" and "There are many things that I would like to change about my life". Participants

indicated their responses to each item using a 4-point Likert-type scale ranging from 0 (*never)* to 3 (*almost always)*. The total score was calculated by first reverse scoring items 3 and 4 and then summing the items and dividing by the number of items (E. S. Huebner, personal communication, February 19, 2012). The potential range of values for the total score is 0 – 3. Higher scores indicate greater life satisfaction.

Perceived Stress. Perceived stress was measured using the Perceived Stress Scale (PSS - Appendix P; S. Cohen et al., 1983), a 14-item scale that is designed to assess the degree to which respondents find their lives " unpredictable, uncontrollable, and overloading" (S. Cohen et al., 1983, p. 387). Theoretically, it reflects cognitive reappraisal theory (Lazarus, 1977), which emphasizes that it is the individual's personal and contextual appraisal of the event that is the chief determining factor in the resulting level of stress, rather than the nature of the objective event itself. Examples of items include, "In the last month, how often have you been upset because of something that happened unexpectedly?" and "In the last month, how often have you felt nervous or stressed?" Participants indicated their responses to each item using a 5-point Likert-type scale ranging from 0 (*never*) to 4 (*very often*). To calculate the total scale score, items 4, 5, 6, 7, 9, 10, and 13 were reverse scored and then all 14 items were summed. The potential range of values for the total scale score is 0 – 56. Content, predictive, and concurrent validity were established by Cohen and colleagues (1983) in a study of two college samples and one community sample. Construct validity for using this scale with adolescents was established in a study of adolescent psychiatric inpatients (Martin, Kazarian, & Breiter, 1995). In the latter study, a factor analysis of this scale produced two factors, one which was identified as perceived distress and the other which was identified as perceived coping. Cronbach's alpha for this adolescent sample was .86, which was consistent with that found in Cohen and colleagues (1983)

college and community samples, and also with another study with early adolescents, which revealed a Cronbach's alpha of .88 (Yarcheski & Mahon, 1999).

In addition to these measures, an 8-item questionnaire of demographic variables was included (Appendix Q). This asked about the participant's age, gender, race/ethnicity and factors related to socioeconomic status.

Data analysis

As a first step, items in several of the scales were reverse coded so that all items of the scale reflected the appropriate direction of the variable. Specifically, all 10 items of the CAMM scale were reverse coded so that higher scores indicated greater mindfulness (Greco et al., 2011). Items 1, 2, 4, 6, 8, 11, 13, 16, 18, 20, 21, 24, and 25 of the SCS scale were reverse coded so that higher scores on all 26 items indicated greater self-compassion (Neff, 2003a). On the SLSS scale, items 3 and 4 were reverse coded (E. S. Huebner, personal communication, February 19, 2012) so that higher scores on all items of this scale indicated greater life satisfaction, and on the PSS scale items 4, 5, 6, 7, 9, 10, 13 were reverse coded so that higher scores on all items indicated greater perceived stress (S. Cohen et al., 1983). No reverse coding was necessary on the PANAS scales; higher scores on the 10 positive affect items indicated greater positive affect, and higher scores on the 10 negative affect items indicated greater negative affect (Watson et al., 1988).

Next, a series of preliminary analyses were conducted. First, missing data were inspected to ensure that all cases had at least 75% completed data for each set of items on which a total scale score was computed, and also to determine whether a pattern existed in the missing data. One case that had 35% missing data was deleted reducing the sample size to 67 participants. Missing values analysis was run on all scales and missing data were imputed using expectation-

maximization method (EM) in SPSS. Next, total scores for each scale were calculated as per instructions provided by the scales' authors, reverse scoring items in scales as indicated above. In the cases of SCS and SLSS, items were summed and the sum was then divided by the number of items, and for the CAMM, PANAS and PSS scales, the sum was calculated. Frequency distributions and histograms were examined for all total scale scores to determine whether the scores were normally distributed and in particular, whether there was evidence of skewness or kurtosis. Next, Cronbach's alphas were calculated to determine reliability of the scales. To determine direction and degree of linear relationship between scale scores, a correlation analysis was conducted and a correlation matrix was provided.

To determine mediation, four conditions must be met (Baron & Kenny, 1986). These conditions are:

1. The independent variable (X) must affect the dependent variable (Y); we will call this parameter "c″".
2. The independent variable (X) must affect the mediator variable (M); we will call this parameter "a".
3. The mediator variable (M) must affect the dependent variable (Y), when controlling for the independent variable (X), this parameter is labeled "b".
4. When controlling for the mediator (M), the effect of the independent variable (X) on the dependent variable (Y), labeled as "c″", is eliminated in full mediation (Baron & Kenny, 1986) and reduced in partial mediation (MacKinnon, 2008). In other words, c′ must be less than c (Figure 1).

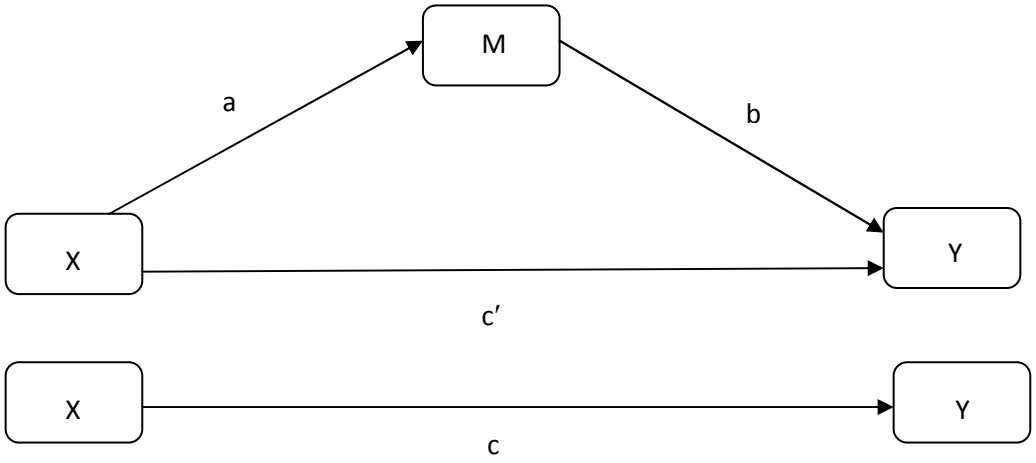


Figure 1. Diagram of a direct effect (X →Y) and a mediated effect (X →M → Y).

The mediated effect is then calculated as the difference between the direct effect when no mediation is present and the case when mediation is controlled, i.e. c-c′. These parameters are often estimated using linear regression. In this study, a path analysis model was used to estimate the effects of the predictor on the mediator and the mediator on each of the four dependent variables. Path analysis is a type of structural model in which all variables are observed. Four separate models were created to estimate the parameters of the mediator, self-compassion, on the four separate dependent variables. Similar to a full structural equation model with latent variables, this allows the parameters and standard errors of a system of linear regression equations to be estimated simultaneously.

In the figures below, the four theoretical models are illustrated. The independent variable is mindfulness (CAMM), the hypothetical mediator is self-compassion (SCS), and the dependent variables are negative affect (Figure 2), positive affect (Figure 3), life satisfaction (Figure 4), and perceived stress (Figure 5). The solid arrow indicates the direct effect of

mindfulness on the dependent variable, the dashed arrow indicates the effect of mindfulness (CAMM) on the mediator (SCS), and the dotted arrow indicates the effect of the mediator (SCS) on the various dependent variables (PA, NA, SLSS, and PSS). The error or disturbance term for self-compassion is indicated by D1, and the error or disturbance term for the dependent variable in each model is indicated by D2. Note that the disturbance terms are illustrated with a circle since in reality they are latent variables (Kline, 2011). In contrast, as the exogenous and endogenous variables in path analysis are observed, they are indicated with rectangles and are each measured by one value, the calculated total score of that variable.

Note that as indicated in the figures below, we would expect the association between mindfulness and negative affect, mindfulness and perceived stress, self-compassion and negative affect, and self compassion and perceived stress to be negative, while the other associations between the variables to be positive.

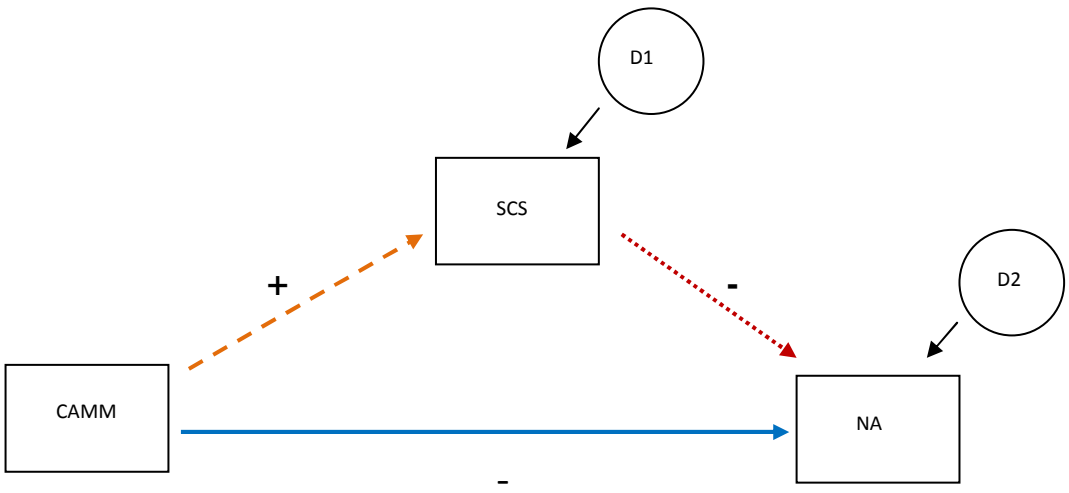


Figure 2. Theoretical model depicting negative affect (NA) as the dependent variable.

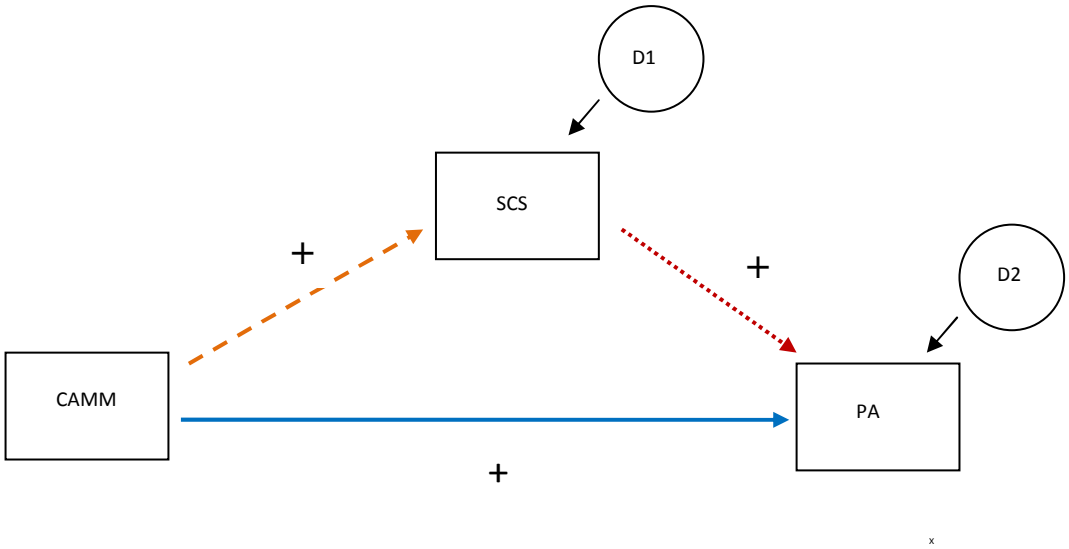


Figure 3. Theoretical model depicting positive affect (PA) as the dependent variable.

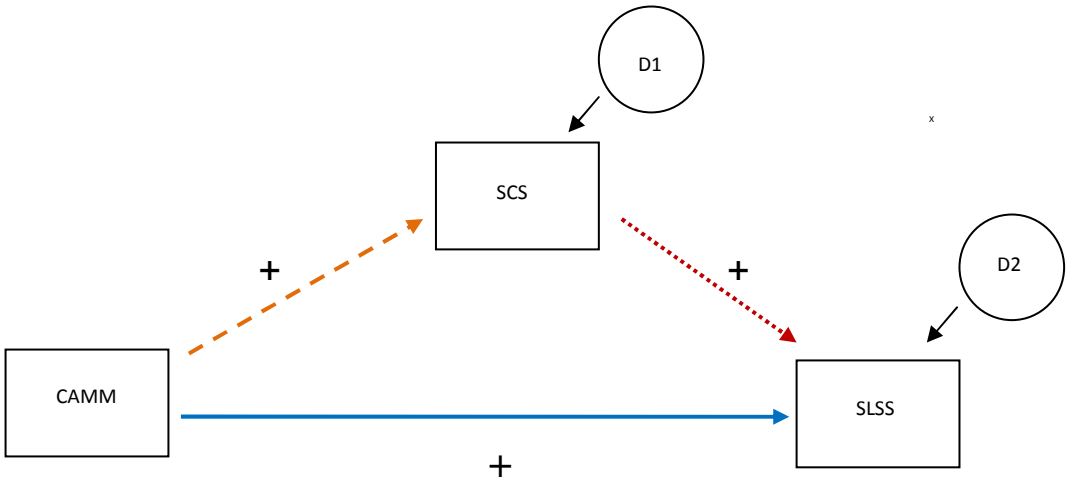
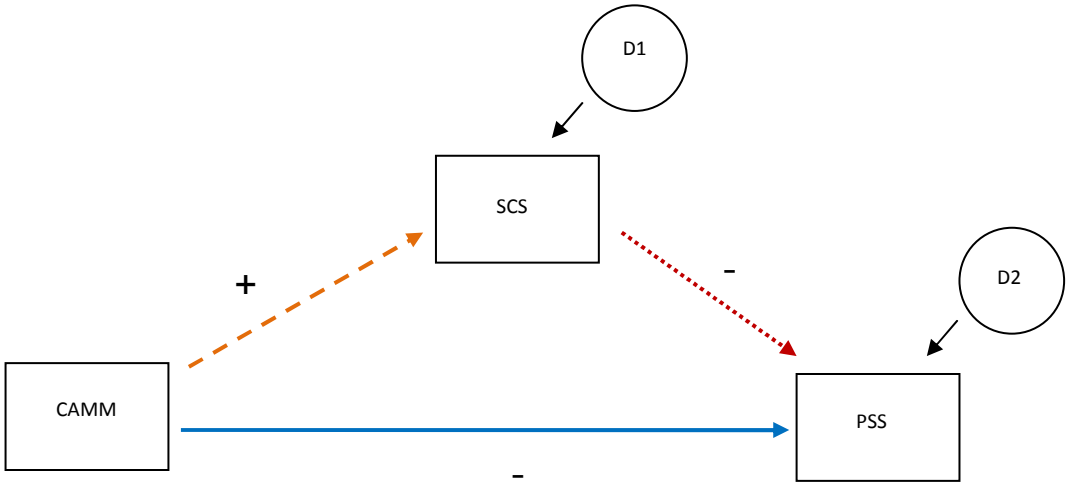


Figure 4. Theoretical model depicting life satisfaction (SLSS) as the dependent variable.



CAMM – Mindfulness
SCS – Self-compassion
PA – Positive affect
NA – Negative affect
PSS- Perceived stress
SLSS- Life Satisfaction

Figure 5. Theoretical model depicting perceived stress (PSS) as the dependent variable.

The procedure to estimate parameter weights was conducted using Mplus software (Muthén & Muthén, 1998-2010). First, the direct path was estimated using the direct model (c), and then the direct path (as well as other paths) was estimated in the mediated model (c′). The difference between these two direct path weights is c - c′, or the estimation of the mediated effect. The statistical significance of the mediated effect is then tested with a bootstrapping procedure. Bootstrapping is a non-parametric method which uses re-sampling with replacement to establish an estimate of a statistic, in this case, the indirect effect (Kline, 2011; MacKinnon, 2008). Confidence intervals were also provided in the bootstrapping process. This method therefore provides a test of the null hypothesis that c-c′ equals zero. Rejecting this hypothesis demonstrates that the difference between the direct path in the mediated model and the direct

path in the direct model is greater than (or less than) zero, and therefore statistically significant. The bootstrapping method is recommended for determining significance of mediation when utilizing small to medium-sized samples (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2004; Shrout & Bolger, 2002). Since the four mediated models are just-identified, it was not possible to provide indices of model fit, and therefore these indices are not reported.

It is important to note that because the data are cross-sectional and therefore temporally ambiguous, i.e. self-compassion is being measured at the same point in time as mindfulness and the dependent variables, we cannot conclusively state that greater mindfulness precedes greater self-compassion if, in fact, that relationship is significant; the reverse may be true as well. In other words, it is plausible that higher self-compassion somehow allows individuals to become more mindful. In order to examine direction of influence, one must measure the variables at three separate points in time. To address this concern, I analyzed the alternate path model in which the mindfulness variable and self-compassion variable are switched (Figure 6).

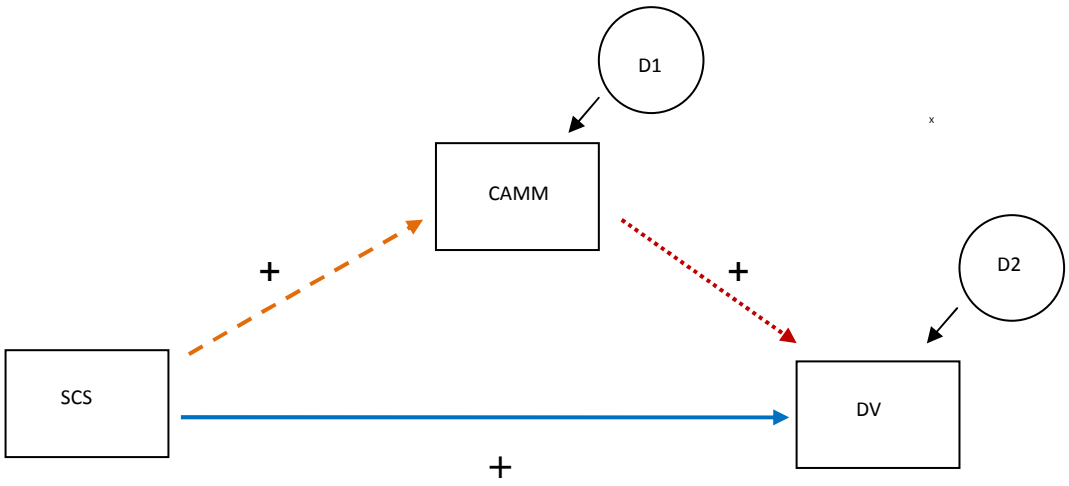


Figure 6. Alternative model depicting mindfulness (CAMM) as the mediator and self-compassion (SCS) as the predictor variable.

Chapter 4 - Results

Preliminary analyses

Initially, descriptive statistics were computed for all scale items to determine percent of missing data and distributional characteristics of the items. These item-level data for the CAMM (see Table 2), SCS (see Table 3), PA (see Table 4), NA (see Table 5), SLSS (see Table 6) and PSS (see Table 7) indicated that no single item on any scale had greater than 9% missing data. One respondent had 35% missing data and therefore was deleted from the dataset. Once this respondent was removed, all scales had 100% of respondents completing at least 75% of the items for each scale.

Missing item values were imputed using expectation maximization (EM), a maximum likelihood procedure that uses an iterative process to estimate parameters and missing data values until stabilization is achieved (Dempster, Laird, & Rubin, 1977). Imputation was conducted separately for each set of scale items.

Descriptive Statistics

Demographic variables. If a given demographic variable had different associations with an outcome variable at various levels of the demographic variable, it would be essential to investigate the different levels of the demographic variable separately in the mediational analysis. For this reason, it was important to examine the relationship of the demographic variables to the outcome variables. To determine if there was a statistically significant difference in the influence of the demographic variables on the outcome variables (PA, NA, SLSS, and PSS), linear regression was conducted. All demographic variables were entered as predictor variables and PA, NA, SLSS, and PSS were entered as dependent variables in successive

Table 2
Item level data for CAMM, N = 67

Scale Item	Mean	SD	Corrected item-total correlation	Percent missing
I get upset with myself for having feelings that don't make sense.	2.46	1.05	.78	0
At school, I walk from class to class without noticing what I'm doing.	2.63	1.24	.38	0
I keep myself busy so I don't notice my thoughts or feelings.	2.44	1.14	.58	1.5
I tell myself that I shouldn't feel the way I'm feeling.	2.38	1.10	.69	3.0
I push away thoughts that I don't like.	1.79	.98	.52	0
It's hard for me to pay attention to only one thing at a time.	2.04	1.24	.55	0
I get upset with myself for having certain thoughts.	2.62	1.06	.68	1.5
I think about things that have happened in the past instead of thinking about things that are happening right now.	1.78	1.01	.64	0
I think that some of my feelings are bad and that I shouldn't have them.	2.39	1.13	.66	1.5
I stop myself from having feelings that I don't like.	2.44	1.01	.37	1.5

Table 3

Item level data for SCS, N = 67

Scale Item	Mean	SD	Corrected item-total correlation	Percent missing	Percent indicating "no answer"
I'm disapproving and judgmental about my own flaws and inadequacies.	3.13	1.43	.46	0	1.5
When I'm feeling down I tend to obsess and fixate on everything that's wrong.	2.82	1.37	.52	0	3.0
When things are going badly for me, I see the difficulties as part of life that everyone goes through.	3.40	1.21	.11	3.0	3.0
When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world.	3.36	1.19	.42	0	3.0
I try to be loving towards myself when I'm feeling emotional pain.	2.83	1.23	.13	0	9.0
When I fail at something important to me I become consumed by feelings of inadequacy.	2.77	1.33	.32	1.5	3.0
When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am.	2.88	1.25	.38	0	3.0
When times are really difficult, I tend to be tough on myself.	2.64	1.30	.42	0	1.5

Scale Item	Mean	SD	Corrected Item-total correlation	Percent missing	Percent indicating "no answer"
When something upsets me, I try to keep my emotions in balance.	3.60	1.24	.29	0	3.0
When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.	2.61	1.22	.26	0	3.0
I'm intolerant and impatient towards those aspects of my personality I don't like.	2.94	1.23	.57	1.5	4.5
When I'm going through a very hard time, I give myself the caring and tenderness I need.	2.53	1.09	.37	0	1.5
When I'm feeling down, I tend to feel like most other people are probably happier than I am.	2.84	1.30	.33	3.0	4.5
When something painful happens I try to take a balanced view of the situation.	3.16	1.24	.17	0	1.5
I try to see my failings as part of the human condition.	3.14	1.29	.17	0	4.5
When I see aspects of myself that I don't like, I get down on myself.	2.97	1.33	.54	0	3.0
When I fail at something important to me, I try to keep things in perspective.	3.35	1.12	.39	0	3.0

Scale Item	Mean	SD	Corrected item-total correlations	Percent missing	Percent indicating "no answer"
When I'm really struggling, I tend to feel like other people must be having an easier time of it.	2.96	1.30	.48	0	4.5
I'm kind to myself when I'm experiencing suffering.	2.73	1.02	.41	0	6.0
When something upsets me I get carried away with my feelings.	2.99	1.36	.45	0	1.5
I can be a bit cold-hearted towards myself when I'm experiencing suffering.	3.03	1.34	.47	0	3.0
When I'm feeling down I try to approach my feelings with curiosity and openness.	2.90	1.10	.09	0	6.0
I'm tolerant of my own flaws and inadequacies.	2.99	1.22	.32	1.5	3.0
When something painful happens I tend to blow the incident out of proportion.	3.10	1.27	.33	0	3.0
When I fail at something that's important to me, I tend to feel alone in my failure.	2.80	1.24	.42	0	3.0
I try to be understanding and patient towards those aspects of my personality I don't like.	2.94	1.12	.44	3.0	1.5

Table 4

Item level data for PA scale, N = 67

Scale Item	Mean	SD	Corrected item-total correlations	Percent missing
interested	3.61	.97	.54	3.0
excited	3.68	1.07	.58	1.5
strong	3.63	.94	.48	1.5
enthusiastic	3.64	1.00	.55	1.5
proud	3.35	1.09	.73	3.0
alert	3.49	1.10	.64	3.0
attentive	3.53	.91	.45	4.5
active	3.70	.99	.49	1.5
determined	4.07	.74	.51	1.5
inspired	3.35	.99	.51	3.0

Table 5

Item level data for NA scale

Scale item	Mean	SD	Corrected item-total correlation	Percent missing
scared	2.37	1.30	.59	0
irritable	3.17	1.16	.59	1.5
distressed	3.03	1.29	.64	1.5
upset	2.81	1.34	.71	0
guilty	2.12	1.27	.56	0
hostile	2.03	1.07	.53	4.5
nervous	3.18	1.19	.68	1.5
jittery	2.73	1.26	.58	3.0
afraid	2.20	1.35	.71	1.5
ashamed	2.29	1.36	.62	1.5

Table 6
Item level data for the SLSS, N = 67

Scale Item	Mean	SD	Corrected item-total correlation	Percent missing
My life is going well.	2.88	.86	.78	0
My life is just right.	2.61	.98	.75	0
I would like to change many things in my life.	2.42	1.00	.55	0
I wish I had a different kind of life.	2.99	1.07	.71	0
I have a good life.	3.09	.87	.72	0
I have what I want in life.	2.75	.91	.78	0
My life is better than most kids.	3.01	1.09	.53	1.5

Table 7

Item level data from the PSS, N = 67

Scale Item	Mean	SD	Corrected item-total correlation	Percent missing
...been upset because of something that happened unexpectedly?	2.00	1.14	.56	0
...felt that you were unable to control the important things in your life?	2.17	1.23	.68	3.0
…felt nervous and "stressed"?	3.06	1.17	.48	0
...dealt successfully with irritating life hassles?	1.65	1.08	.06	4.5
...felt that you were effectively coping with important changes that were occurring in your life?	1.48	1.05	.21	6.0
…felt confident about your ability to handle your personal problems?	1.36	1.12	.48	0
...felt that things were going your way?	1.98	1.08	.60	4.5
...found that you could not cope with all the things that you had to do?	2.05	1.18	.66	1.5

Scale Item	Mean	SD	Corrected item-total correlation	Percent missing
...been able to control irritations in your life?	1.73	.96	.22	1.5
...felt that you were on top of things?	1.73	1.01	.44	1.5
...been angered because of things that happened that were outside of your control?	2.51	1.10	.37	4.5
...found yourself thinking about things that you have to accomplish?	3.15	.96	.08	1.5
...been able to control the way you spend your time?	1.85	.95	.30	3.0
...felt difficulties were piling up so high that you could not overcome them?	2.26	1.27	.55	1.5

regressions. Results indicated that the only demographic variable that significantly influenced outcome variables was gender, and all outcome variables with the exception of PA were significantly influenced (see Table 8). To determine the interaction or moderating effect of the demographic variables on gender, i.e. to see which of the demographic variables were influencing males differently than females, interaction variables were created by computing the cross-products of gender and each other demographic variable. Linear regression was then conducted with both the demographic variables and interaction variables entered as independent variables, and each of the outcome variables entered successively as dependent variables. Results of this series of regression analyses indicated that fathers' education affected level of perceived stress differently for boys than girls. For boys, perceived stress increased as fathers' education level increased. For girls, the reverse was true; perceived stress decreased as fathers' education increased ($\beta = -.358$, $t\ (64) = -2.11$, $p < .05$; 95% CI [-4.99, -.131]). This is illustrated in the associated interaction plot (Figure 7).

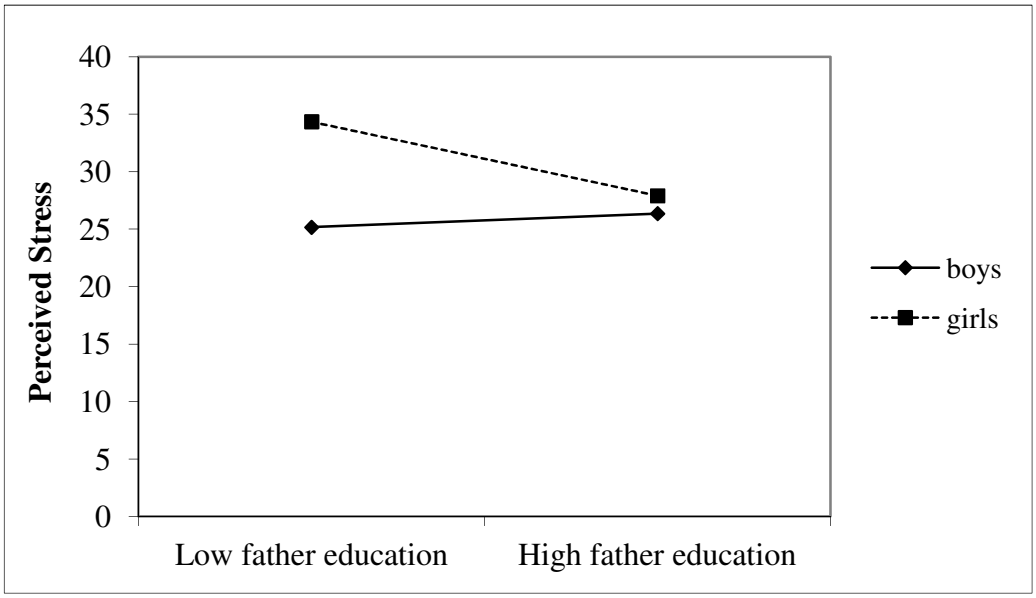


Figure 7. Interaction effect of gender and father education on perceived stress

Means and standard deviations. Means, standard deviations, confidence intervals, skewness and kurtosis were computed for all scale scores for the sample as a whole (see Table 9). Results indicated that all scales were normally distributed in that the ratio of skew/SE was between -2 and +2 and ratio of kurtosis/SE was between -3 and +3 and means were similar to that reported in previous studies (see Table 10). Next, the sample was separated by gender, and means, standard deviations, confidence intervals, skewness, and kurtosis were reported for each sub-sample separately (see Table 11). All scale scores were normally distributed in the female sample; however, in the male sample, SLSS was slightly skewed (skew/se= -2.20). This indicated that in this sample, more males than not felt satisfied with their lives. In addition, a *t*-test was conducted to determine if there was a statistically significant difference in responses of males and females, as well as a Cohen's *g* index to determine the magnitude of the effect size of this difference. A pooled standard deviation and correction factor were used to compute an unbiased Cohen's *g* for the two independent sub-groups (Borenstein, Hedges, Higgens, & Rothstein, 2009). These analyses demonstrated that there was no significant difference between males and females on positive affect (t (65) = 1.76, p = .08). However, on all other variables, results demonstrated that there was a statistically significant difference between these two groups (see Table 11). Cohen's recommendations for estimates for effect size are small = 0.2, medium = 0.5, and large = 0.8 (J. Cohen, 1977). In these analyses, Cohen's *g* values indicate that there was a large effect size difference between males and females for CAMM, SCS, NA, SLSS, and PSS scale scores, and a medium effect size for that of PA (see Table 11). The medium effect size with a non-significant result for PA suggests that a larger sample size might produce a statistically significant result for this variable.

Table 8

Simultaneous Regression Dependent Variables on Demographic Variables, $N = 65$

	PA			NA			SLSS			PSS		
	β	*t*	Sig.	β	*t*	Sig.	β	*t*	p	β	*t*	Sig.
Age	.06	.47	.64	.03	.21	.83	.05	.47	.64	.05	.35	.73
Gender	-.21	-1.66	1.02	**.35**	**2.86**	**.006**	**-.33**	**-3.14**	**.003**	**.32**	**-3.14**	**.003**
Race/ethnicity	-.02	-.14	.89	.08	.57	.57	-.20	-1.69	.10	.19	1.44	.16
Number of computers in household	-.01	-.09	.93	-.20	-1.31	.20	-.06	-.46	.65	-.19	-1.28	.21
Number of cars in household	.05	.35	.73	-.08	-.60	.55	.22	1.81	.08	-.07	-.52	.60
Number of vacations taken in last year	.03	.19	.85	-.03	-.22	.83	.23	1.84	.07	-.04	-.26	.80
Mother's education	.21	1.08	.28	-.05	-.24	.81	.27	1.62	.11	-.15	-.81	.42
Father's education	.11	.57	.57	-.10	-.48	.63	.08	.46	.65	.01	.03	.97

Note. Significant results are in boldface, $p < .05$, two-tailed.

Table 9

Means, Standard Deviations, and Distribution Data for Total Scale Scores, N = 67

Scale	Mean (SD)	95% CI [LL, UL]	Skewness (SE)	Kurtosis (SE)
CAMM	22.95 (7.40)	[21.14, 24.75]	-.034 (.293)	.580 (.578)
SCS	2.98 (0.54)	[2.85, 3.11]	-.426 (.293)	.137 (.578)
PA	36.05 (6.40)	[34.48, 37.61]	-.221 (.293)	.177 (.578)
NA	25.92 (8.89)	[23.75, 28.09]	.240 (.293)	-.873 (.578)
SLSS	2.82(0.75)	[2.64, 3.00]	-.362 (.293)	-.893 (.578)
PSS	28.99 (8.01)	[27.04, 30.95]	-.174 (.293)	-.029 (.578)

Note. CAMM = Children and Adolescent Mindfulness Measure, SCS = Self-compassion Scale, PA = Positive Affect, NA = Negative Affect, SLSS = Student Life Satisfaction Scale, PSS = Perceived Stress Scale.

Table 10

Means and Standard Deviations of Total Scale Scores of Select Past Studies

Scale	Author, year	Sample	Mean
CAMM	Greco, Baer, & Smith (2011)	Grades 5-10	22.73 (7.33)
		Grades 9 - 10	24.52 (7.50)
SCS	Van Dam, Sheppard, Forsythe, Earlywine (2011)	adults	2.20 (.50)
		adolescents	2.97 (.62)
	Neff & McGehee (2010)	young adults	2.99 (.61)
PA	Watson, Clark, & Tellegen (1988)	college students	29.10 (8.30)
			36.20 (6.30)
	Huebner & Dew (1995)	adolescents	22.62 (7.63)
NA	Watson, Clark, & Tellegen (1988)	college students	14.80 (5.40)
			22.10 (6.40)
	Huebner & Dew (1995)	adolescents	34.65 (7.33)
SLSS	Huebner (1991)	adolescents	20.64 (4.51) (Sum)
	Huebner, Funk, Gilman (2000)	Late adolescents	4.20 (.94)
			4.42 (.89) (Mean)
PSS	Cohen, Kamarck, & Mermelstein (1983)	College students	23.18 (7.31)
			23.67 (7.79)
	Mahon & Yarcheski (2007)	Young adults	25.40 (8.80)

Table 11

Means, Standard Deviations, Normality Data and Effect Size for all Variables by Gender

	Males $n = 28$			Females $n = 39$					
	Mean (SD)	Skewness (SE)	Kurtosis (SE)	Mean (SD)	Skewness (SE)	Kurtosis (SE)	*t*-test $df = 65$	*p*-value	Cohen's *g* 95% CI
CAMM	26.49 (7.32)	.211 (.441)	-.293 (.858)	20.43 (6.44)	-.716 (.378)	.525 (.741)	3.61	.001	.88 [.38, 1.38]
SCS	3.25 (0.48)	-.649(.441)	.314 (.858)	2.78 (.50)	-.507 (.378)	.529 (.741)	3.87	.000	.95 [.44, 1.45]
PA	37.65 (6.12)	.178 (.441)	-.417 (.858)	34.90 (6.44)	-.440 (.378)	.217 (.741)	1.76	.083	.43 [-.06, .92]
NA	22.25 (8.20)	.625 (.441)	-.383 (.858)	28.56 (8.51)	.046 (.378)	-.845 (.741)	-3.04	.003	-.74 [-1.24, -.25]
SLSS	3.17 (0.71)	**-.972 (.441)**	-.026 (.858)	2.57 (0.68)	-.227 (.378)	-.833 (.741)	3.45	.001	.86 [.36, 1.36]
PSS	25.80 (7.79)	-.115 (.441)	-1.02 (.858)	31.29 (7.44)	-.181 (.378)	.988 (.741)	-2.92	.005	-.72 [-1.21, -.22]

Note. CAMM = Children and Adolescent Mindfulness Measure, SCS = Self-Compassion Scale, PA = Positive Affect, NA = Negative Affect, SLSS = Student Life Satisfaction Scale, PSS = Perceived Stress Scale; skewed data are in boldface.

Cronbach's Alpha

Cronbach's alphas were calculated for all scales. Results indicated that reliabilities for all scales were similar to that found in previous studies. Cronbach's alpha for the 10-item CAMM was calculated at 0.87; this was somewhat higher than that of a previous study which calculated alpha for CAMM at 0.80 (Greco et al., 2011). Alpha for the 26-item SCS in this study was 0.83; a previous study calculated alpha for SCS somewhat higher at 0.93 (Neff, 2003a). Additionally, alpha for the 10-item PA in this study was 0.85, previous studies calculated alpha for PA between 0.86 and 0.90 (Watson et al., 1988). Alpha for the 10-item NA in this study was 0.89, previous studies calculated alpha for NA slightly lower between 0.84 and 0.87 (Watson et al., 1988). Alpha for 7-item SLSS was calculated at 0.89; previous studies calculated alpha for SLSS slightly lower at 0.82 (Huebner, 1991), 0.84 (Gilman & Huebner, 1997), and 0.86 (Dew & Huebner, 1994). Lastly, alpha for the 14-item PSS was calculated at 0.79; previous studies calculated alpha for this scale slightly higher at 0.86 (Martin et al., 1995) and 0.88 (Yarcheski & Mahon, 1999).

Bivariate Correlations

Bivariate correlations and confidence intervals were computed for all scale scores to determine the relationships between variables. With the exception of the relationships between positive affect and self-compassion, and between positive and negative affect, all bivariate correlations were statistically significant and in the expected direction (see Table 12). In addition, no correlation was greater than 0.76, and no upper confidence limit was greater than 0.85, indicating that the measures assessed different constructs. In particular, the correlation between CAMM and SCS was 0.59, 95% CI [.41, .73], providing evidence that mindfulness and self-compassion are separate constructs. The group was then split by gender, and bivariate

correlations and their respective confidence intervals were computed on each gender group separately (see Table 13). An additional analysis was conducted to determine the confidence intervals for the difference between the correlations for these two groups (Zou, 2007). These analyses determined that the only relationships in which the difference of correlations, when weighted by sample size, was not statistically significantly different from zero, reflecting that there was a statistically significant difference in the correlations between males and females, was that of CAMM and PA, and SCS and PSS. For males, mindfulness was positively associated with positive affect significantly more than this association for females (in fact the relationship between mindfulness and positive affect for females was non-significant). Additionally, the negative association between self-compassion and perceived stress was statistically significantly greater in females than it was in males (see Table 14).

In an attempt to thoroughly examine these data for the measures utilized in the study, the self-compassion scale was divided into its six subscales and reliability and correlational analyses were conducted. Cronbach's alphas on the six subscales were calculated as: self-kindness (0.64), self-judgment (0.83), common humanity (0.76), isolation (0.78), mindfulness (0.72), and overidentification (0.74). Correlations are reported in Table 15. Upon inspection of these correlations, it was evident that the negatively worded subscales, i.e. self-judgment (SJ), isolation (ISO), and over-identification (OI), were more statistically significantly related with the other variables than the positively worded subscales, i.e. self-kindness, common humanity, and mindfulness, even though each negatively worded subscale is the reverse of a positively worded one. For example, self-judgment addresses the same theoretical concept as does self-kindness, but is worded negatively, e.g., "When times are really difficult, I tend to be tough on myself" (self-judgment item) and "I try to be loving towards myself when I'm feeling emotional pain"

Table 12

Bivariate Correlations and Confidence Intervals, N = 67

	SCS	PA	NA	SLSS	PSS
CAMM	.59*** [.41, .73]	.26* [.02, .47]	-.61*** [-.74, -.43]	.67*** [.51, .78]	-.61*** [-.74, -.43]
SCS		.22 [-.02, .44]	-.64*** [-.76, -.47]	.52*** [.32, .68]	-.70*** [-.80, -.55]
PA			-.24 [-.45, 0]	.43*** [.21, .61]	-.30* [-.50, -.06]
NA				-.63*** [-.76, -.46]	.76*** [.64, .85]
SLSS					-.69*** [-.80, -.54]

Note. CAMM = Children and Adolescent Mindfulness Measure, SCS = Self-compassion Scale, PA = Positive Affect, NA = Negative Affect, SLSS = Student Life Satisfaction Scale, PSS = Perceived Stress Scale; * = Correlation is significant at the .05 level (2-tailed);** = Correlation is significant at the .01 level (2-tailed); *** = Correlation is at the .001 level (2-tailed).

Table 13

Bivariate correlations and Confidence Intervals by Gender; males n = 28, females n = 39

	CAMM	SCS	PA	NA	SLSS	PSS
CAMM	1	.55** [.22, .77]	.49** [.14, .73]	-.45* [-.70, -.09]	.51** [.17, .74]	-.49** [-.73, -.14]
SCS	.47** [.18, .68]	1	-.02 [-.39, .36]	-.58** [-.78, -.25]	.39* [.02, .67]	-.46* [-.71, -.10]
PA	-.03 [-.34, .29]	-.02 [-.33, .30]	1	-.18 [-.52, .21]	.43* [.07, .69]	-.15 [-.50, .24]
NA	-.62*** [-.78, -.38]	-.57** [-.75, -.31]	-.18 [-.47,.14]	1	-.55** [-.77, -.22]	.74*** [.51, .87]
SLSS	.69*** [.48, .83]	.45** [.16, .67]	.36* [.05, .61]	-.59**[-.76, - .34]	1	-.59** [-.79, -.28]
PSS	-.61*** [-.78, -.36]	-.79*** [-.88, -.63]	-.31 [-.57, .01]	.71*** [.51, .84]	-.69*** [-.83, -.48]	1

Note. CAMM = Children and Adolescent Mindfulness Measure, SCS = Self-compassion Scale, PA = Positive Affect, NA = Negative Affect, SLSS = Student Life Satisfaction Scale, PSS = Perceived Stress Scale; male data above diagonal, female data below diagonal; * significant at the .05 level (2-tailed);** significant at the .01 level (2-tailed); *** significant at the .001 level (2-tailed).

Table 14

Confidence Intervals for the Difference between Correlations of Males and Female; n=28 (male), n = 39 (females)

	SCS	PA	NA	SLSS	PSS
CAMM	[-.44, .31]	**[.05, .91]**	[-.05, .83]	[-.13, .55]	[-.22, .50]
SCS		[-.49, .49]	[-.37, .33]	[-.45, .41]	**[.03, .70]**
PA			[-.47, .48]	[-.37, .48]	[-.31, .63]
NA				[-.29, .41]	[-.24, .27]
SLSS					[-.19, .44]

Note. CAMM = Children and Adolescent Mindfulness Measure, SCS = Self-compassion Scale, PA = Positive Affect, NA = Negative Affect, SLSS = Student Life Satisfaction Scale, PSS = Perceived Stress Scale; significant correlation differences are in boldface; $p < .05$, two-tailed.

Table 15

Bivariate Correlations between Self-Compassion subscale and all other Variables in Model with 95% CI

	SK	CH	MIND	SJ	ISO	OI
PA	.06 [-.18, .30]	-.02 [-.26, .22]	.02[-.22, .26]	.66*** [.50, .78]	.58*** [.39, .72]	.61*** [.43, .74]
NA	-.26* [-.47,-.02]	-.12 [-.35, .12]	-.30 [-.50, -.06]	-.14*** [-.37, .10]	-.54** [-.69, -.34]	-.46*** [-.63, -.25]
SLSS	.17 [-.07, .39]	.15 [-.09, .38]	.14 [-.10, .37]	.39** [.17, .58]	.52*** [.32, .68]	.43*** [.21, .61]
PSS	-.21 [-.43, .03]	-.14 [-.37, .10]	-.27* [-.48, -.03]	-.55*** [-.70, -.36]	-.65*** [-.77, -.49]	-.58*** [-.72, -.39]
CAMM	.07 [-.17, .31]	-.02 [-.26, .22]	.03 [-.21, .27]	.65*** [.49, .77]	.58*** [.39, .72]	.61*** [.43, .74]

Note. SK = self-kindness, CH = common humanity, MIND = mindfulness, ISO = isolation, OI = overidentification, CAMM = Children and Adolescent Mindfulness Measure, SCS = Self-compassion Scale, PA = Positive Affect, NA = Negative Affect, SLSS = Student Life Satisfaction Scale, PSS = Perceived Stress Scale; SJ, ISO, and OI have been reverse coded so that higher scores indicate less of these measures; * = Correlation is significant at the .05 level (2-tailed); ** = Correlation is significant at the .01 level (2-tailed); *** = Correlation is at the .001 level (2-tailed).

(self-kindness item). It was also noted that the positive affect scale was less statistically significantly related to the self-compassion subscales relative to the other variables. Although these findings are interesting and informative, the total self-compassion score was used in the mediational analyses.

Mediational Analysis

The mediational analyses for the four different dependent variables were conducted separately. Mplus version 6.1 software (Muthén & Muthén, 1998-2010) was used to conduct all mediation analyses. Full information maximum likelihood estimation was used as the estimation method. This method assumes multivariate normality and independence of observations. To test for multivariate normality, the Mahalanobis distance test was conducted in Mplus. All variables were entered into the analysis with the exception of SLSS (which was skewed in the male sample, and thus MLR was used as the estimator for analyzing SLSS). This test calculates the distance between each case and the group centroid; this distance is called the Mahalanobis distance. This value is then divided by the degrees of freedom (the number of variables, in this case five). The resulting value is then compared to a critical $\chi 2$ value at $p < .001$. Any values greater than the critical value are considered outliers of multivariate normality (Tabachnick & Fidell, 2001). The Mahalanobis values were inspected for all observations. At 5 df, the $\chi 2$ critical value for outliers was 20.52. None of the Mahalanobis distances reached this value, indicating that there were no statistically significant outliers and supporting multivariate normality. Additionally, as stated earlier, independence of measures was supported by correlation values not greater than 0.76 and their respective upper level confidence intervals not greater than 0.85.

For each subsequent analysis, CAMM was entered as the independent variable and SCS was entered as the potential mediator. After the analysis was conducted with the whole sample,

gender was tested as a moderator by assigning it as a grouping variable in Mplus. During the analysis, the grouping variable constrains coefficient paths for one gender, and then runs the model again constraining them for the other gender. When conducting a path analysis in Mplus, intercepts are constrained to be equal across the two groups. Residual variances and path coefficients are free to vary. This method is preferred over running the model separately with one gender and then with the other because the analysis provides an overall model fit estimate. Standardized estimates and 95% confidence intervals are provided. The standardization method used is noted as STDYX in the output; in this standardizing procedure Mplus uses both the predictor and outcome variances to compute the standardized path weights, and is therefore more model specific than the standardization procedure that uses only the variance of the predictor variable in the standardization process. The results for these analyses are provided below grouped by dependent variable. First, results are provided for positive affect (PA), followed by results for negative affect (NA), life satisfaction (SLSS), and finally perceived stress (PSS). Fit indices are not provided as the models discussed are just-identified, and therefore have zero degrees of freedom. Just-identified or saturated models cannot be tested for fit (Mulaik et al., 1989).

Positive affect. The direct path from mindfulness (CAMM) to positive affect (PA) was statistically significant and in the expected direction in the direct model, but was not statistically significant in the mediated model. In addition, the path from the mediator (SCS) to the dependent variable (PA) was not statistically significant in the mediated model (Figure 8). The path from the mediator (SCS) to the dependent variable (PA) *must* be statistically significant in order for mediation to be considered, as specified by Baron and Kenny (1986). For this reason, further mediation analyses were not considered for this model.

However, when the sample was split by gender, it became apparent that the non-significant direct path (CAMM to PA) in the aforementioned model could be attributed to females; in both the direct and mediated models for males all paths were statistically significant. In females, this direct path was non-significant in both the direct and mediated models (Figure 9). Note that the path from mediator (SCS) to dependent variable (PA) which had been non-significant in the whole sample model was now statistically significant for both males and females. This made it possible for mediation to be considered.

Recognizing that there is debate as to whether the direct path from predictor to outcome variable must be statistically significant in order to consider mediation (Preacher & Hayes, 2004), the models were inspected for mediation for both males and females. According to Baron and Kenny (1986), if the direct path from the predictor to the outcome variable *decreases* when

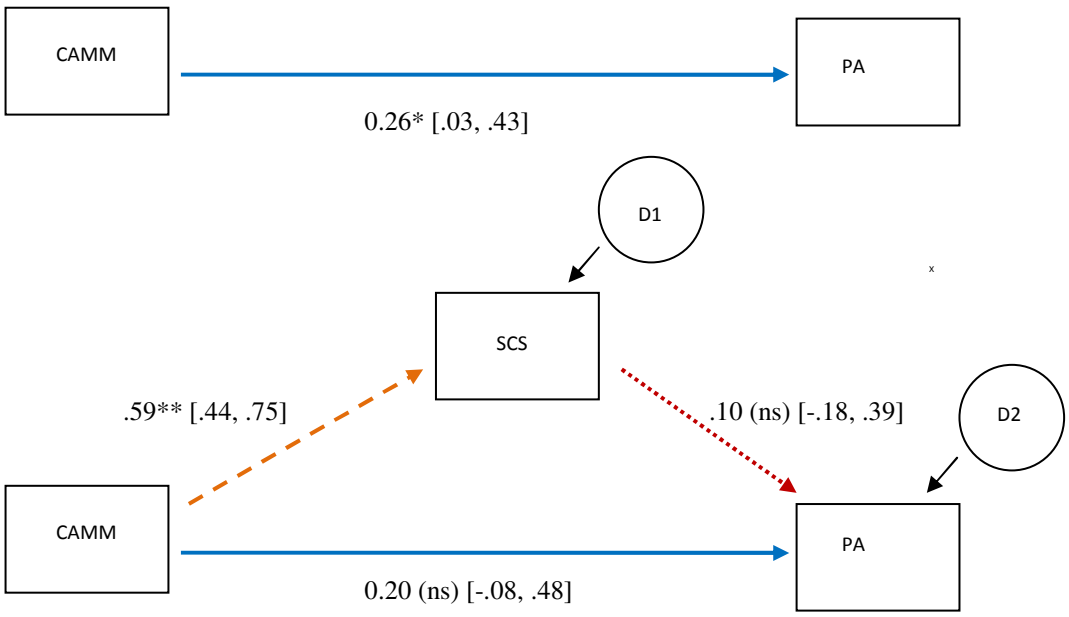


Figure 8. Direct and mediated model with positive affect (PA) as the dependent variable

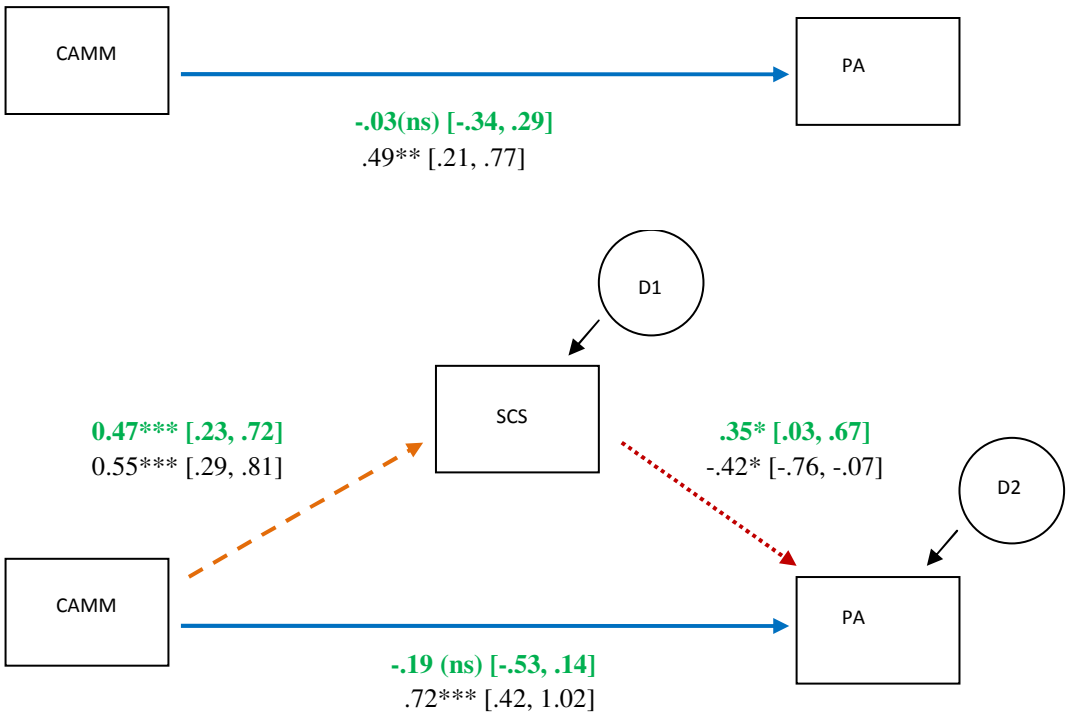


Figure 9. Direct and mediated models for PA (female is first value and in boldface)

the mediated path is present, there is evidence for mediation. However, in this case, the magnitude of the path from the predictor (CAMM) to the outcome variable (PA) appeared to *increase* for both females and males when the mediated path was introduced. This increase suggested a suppression effect (Cheung & Lau, 2008). Suppression occurs when a third unaccounted for variable constrains the effect of one variable on another, resulting in a lower path coefficient than when the third variable is not present. This seemed to occur in the direct model which depicted the CAMM to PA path; SCS could be the third unaccounted for suppressor variable. When this third variable was controlled, as it was in the mediated model, the path coefficient increased to reflect a value that was closer to the actual association between the two variables (Cheung & Lau, 2008; Conger, 1974). To examine whether this observed increase in path coefficient was statistically significant and due to suppression rather than simply

sampling error, a bootstrapping procedure was used. In the case of suppression, $c - c' < 0$, bootstrapping tested the null hypothesis that $c - c'$ was equal to zero.

Bootstrapping was conducted using Mplus (Muthén & Muthén, 1998-2010) and 3000 samples were requested for all analyses. Results indicated that suppression was not significant for either males or females (indirect $\beta = -0.23$ (ns), 95% CI [-0.48, 0.02]; indirect $\beta = 0.17$ (ns), 95% CI [-0.02, 0.35], respectively), and therefore the null hypothesis could not be rejected. The observed increase of the direct path from the direct model to the mediated model appeared to be due to sampling error and not suppression.

Negative affect. The results for the model when negative affect (NA) in entered as the dependent variable were more straightforward. All paths were statistically significant and in the expected direction in this model when utilizing the whole sample (Figure 10). Additionally, when the mediated path was introduced, the magnitude of the association between the predictor

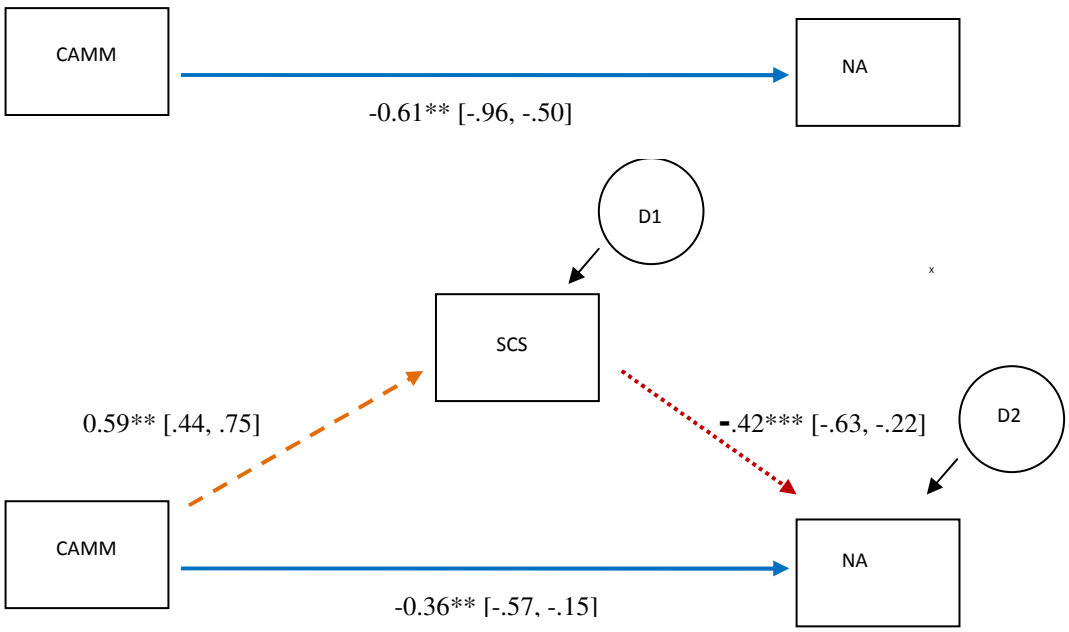


Figure 10. Direct and mediated models with negative affect (NA) as the dependent variable

(CAMM) and the outcome variable (NA) decreased relative to the direct model, indicating that mediation may be present, and that self-compassion may be explaining in part the relationship between mindfulness (CAMM) and negative affect (NA).

The bootstrapping procedure was used to determine significance of mediation. Results indicated that the mediation path was statistically significant (indirect $\beta = -0.03$, $p < .01$, 95% CI [-0.05, -0.01]), i.e. $c - c'$ is statistically significantly different from zero. It was then concluded that the mediation effect of self-compassion on the relationship between mindfulness and negative affect was statistically significant for the whole sample.

When the sample was split by gender, results were somewhat different. In males, the magnitude of the path from the predictor (CAMM) to the outcome variable (NA) decreased from $\beta = -0.44$ in the direct model to $\beta = -0.17$ in the mediated model and became non-significant; in females, the magnitude of the path decreased from $\beta = -0.62$ in the direct model to $\beta = -0.45$ in the mediated model and remained statistically significant (Figure 11). This decrease in path weight from the direct model to the mediated model implies a meditational effect (Baron & Kenny, 1986).

The models for both males and females were further explored for significance of mediation. The significance of the mediation path was tested with the bootstrapping method, and results indicated that for both males and females, the mediation path was statistically significant (indirect $\beta = -0.27$, $p < .05$, 95% CI [-0.52, -0.02] and indirect $\beta = -0.17$, $p < .05$, 95% CI [-0.30, -0.03], respectively). Thus, it can then be concluded that the relationship between mindfulness and negative affect is explained in part by self-compassion in females. In males, the direct

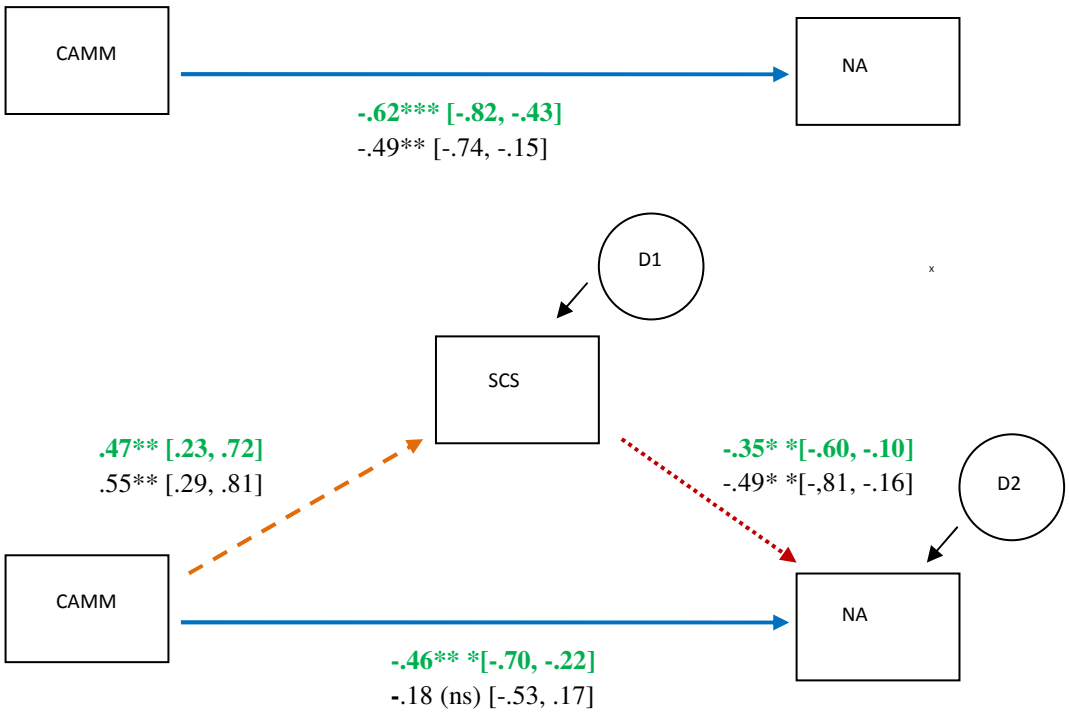


Figure 11. Direct and mediated models for NA grouped by gender (female is first and boldfaced)

relationship had become non-significant in the mediated model and the mediation effect was statistically significant. Therefore, self-compassion can be said to fully mediate the relationship between mindfulness and negative affect in males.

Life satisfaction. Life satisfaction (SLSS) was then introduced as the dependent variable, and path analysis was initially conducted on the sample as a whole. Initial results indicated that the path from self-compassion (SCS) to life satisfaction (SLSS) was not statistically significant (Figure 12). As the significance of this path is essential to establish mediation, no further mediational analysis was conducted on the sample as a whole.

To explore whether this insignificant path could be attributed to one particular gender, the sample was then grouped by gender, and the analysis was run again. In addition, because of evidence of skewness in the male sample for SLSS, the analysis was also run with the MLR

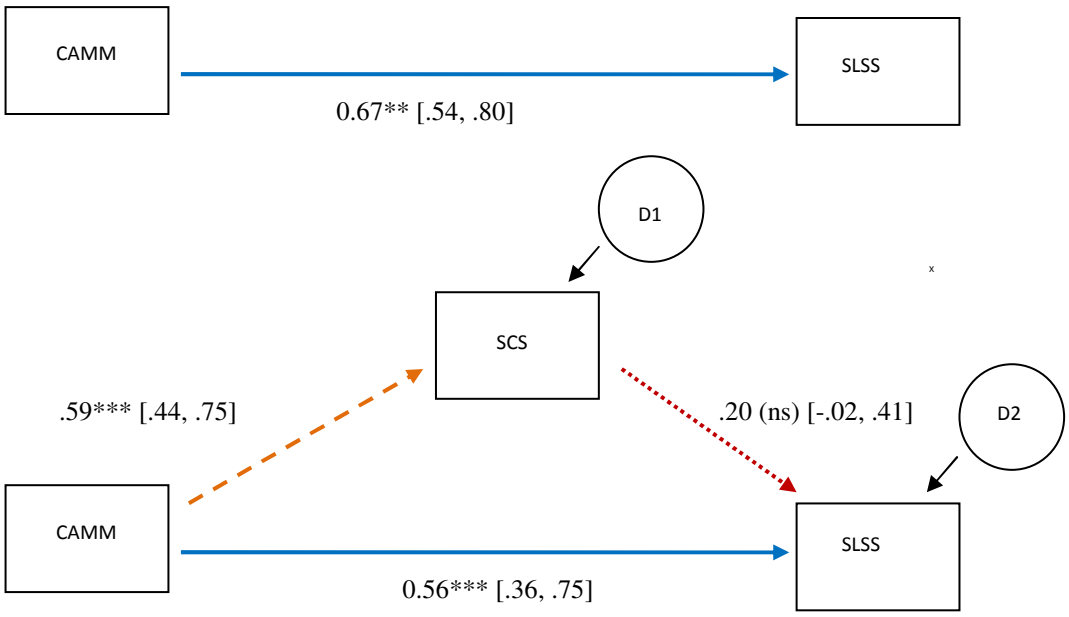


Figure 12. Direct and mediated models with life satisfaction (SLSS) as the dependent variable

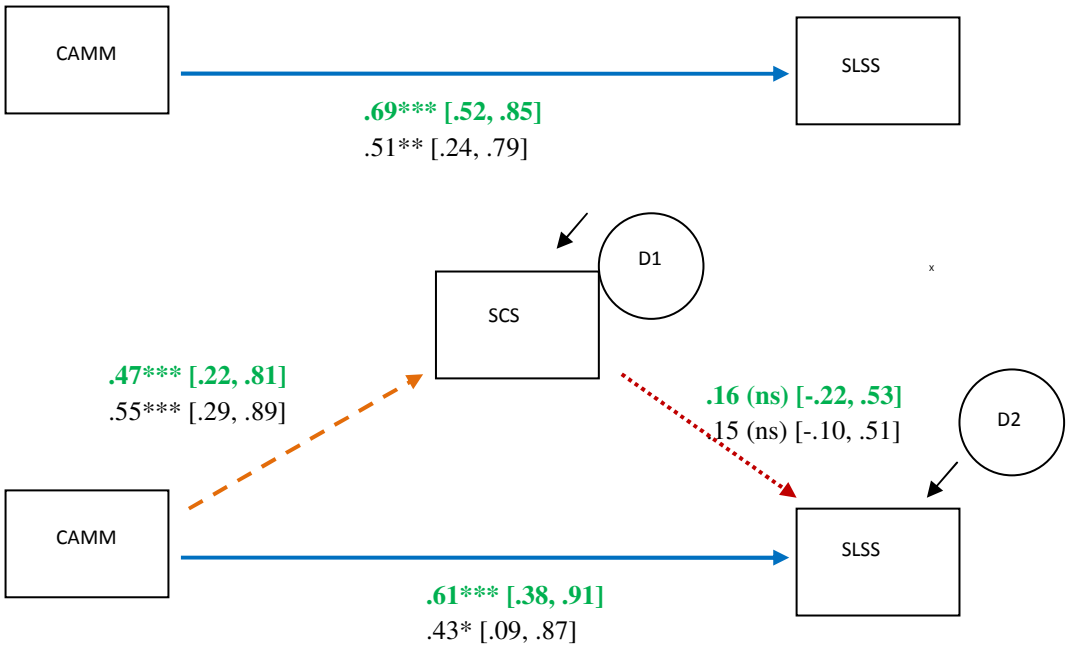


Figure 13. Direct and mediated models for SLSS grouped by gender (female is first value and in boldface)

estimator in Mplus with full information matrix. This is a non-parametric estimator that is used with non-normal data. Estimates were consistent with both ML and MLR estimators; however, confidence intervals differed, and confidence intervals reported here are from the MLR analysis. For both males and females, the path from the mediator (SCS) to the dependent variable (SLSS) remained non-significant (Figure 13). For this reason, no further mediational analysis was conducted with life satisfaction (SLSS) as the dependent variable.

Perceived stress. Perceived stress (PSS) was then introduced in the analysis as the dependent variable using the whole group sample. Results indicated that all paths were statistically significant and in the expected direction (Figure 14). Additionally, there was a decrease in the magnitude of the path from the predictor (CAMM) to the dependent variable (PSS) when the mediation path was introduced, providing evidence for mediation. To determine the significance of mediation, the bootstrapping procedure was conducted. Results indicated that the estimate for the mediation path was statistically significant (indirect $\beta = -0.327$, $p < .001$, 95% CI [-0.50, -0.15]). Therefore, it can be concluded that self-compassion (SCS) partially mediates the relationship between mindfulness (CAMM) and perceived stress (PSS) for this whole sample.

The next step was to investigate whether this mediation effect was specific to one gender or the other. After grouping by gender, the analysis was re-run. Results of this analysis indicated a different model for males and females. For females, all paths retained their significance. However, in males, the path from self-compassion (SCS) to perceived stress (PSS) was non-significant (Figure 15). Since this latter path is essential to test for mediation, it was determined that mediation was not present for males and no further mediational analysis was conducted for this sub-group. However, for females, the magnitude of the path from the predictor (CAMM) to

the outcome variable (PSS) decreased when the mediation path was introduced, suggesting the presence of mediation. The bootstrapping procedure was then conducted to determine whether this mediation effect was statistically significant. Results indicated that the estimate of the path

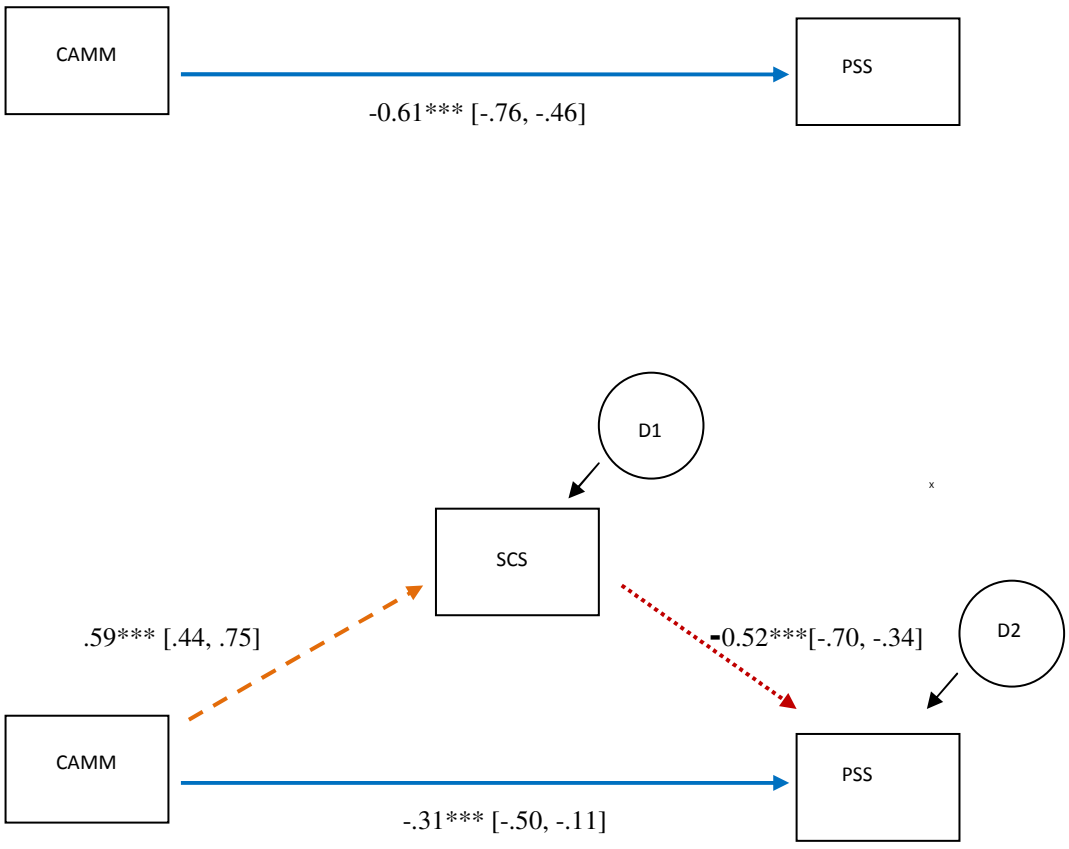


Figure 14. Direct and mediated models with perceived stress (PSS) as the dependent variable

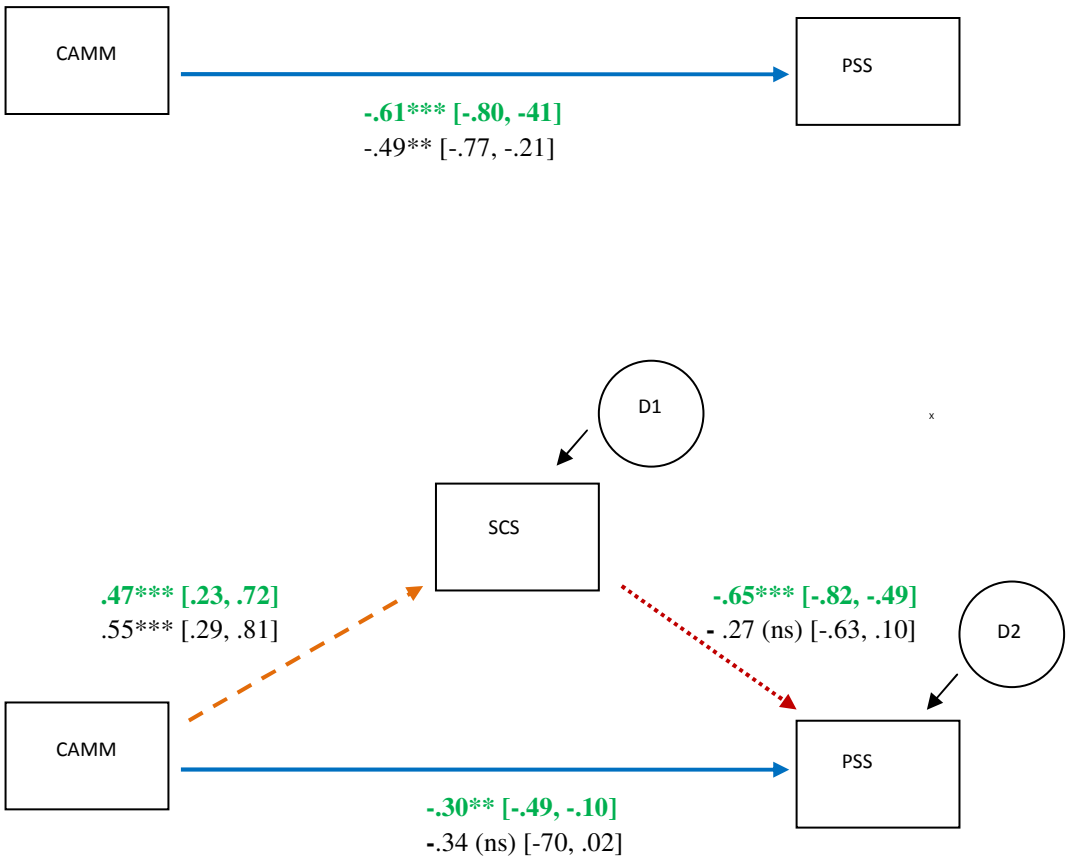


Figure 15. Direct and mediated models for PSS grouped by gender (female is first value and in boldface)

was statistically significant (indirect β = -0.31, $p < .01$), 95% CI [-0.49, -0.13]). It was therefore concluded that self-compassion (SCS) partially mediated the relationship between mindfulness (CAMM) and perceived stress (PSS) for females.

Alternate Models

To assess whether the hypothesized model with self-compassion as the mediator was the only model that demonstrated statistically significant mediation or whether alternate models would as well, the model with self-compassion as the predictor variable and mindfulness as the

mediator was tested. Theoretically, this model was plausible because it is conceivable that greater self-compassion can imply greater mindfulness, in that being kinder to oneself can bring about greater acceptance of oneself and one's situation (a component of mindfulness) which would then lead to positive well-being outcomes. To this end, four models were run with each of the four dependent variables. All procedures were followed identically to that of the previous analyses, including using full information maximum likelihood (ML) as the estimator for PA, NA, and PSS and maximum likelihood with robust errors (MLR) as the estimator for SLSS due to the latter's slightly skewed distribution in the male sample. Results for each model are discussed below.

Positive affect. The direct path from self-compassion (SCS) to positive affect (PA) was not statistically significant in the direct model. However, since there is some debate as to the necessity of a statistically significant direct path to assess mediation (Preacher & Hayes, 2004), a mediational analysis was conducted. This analysis demonstrated that the path from CAMM to PA is non-significant (Figure 16), and since the significance of this path *is* essential to test for mediation (Baron & Kenny, 1986), no further mediational analyses were considered for this whole group model.

When split by gender, the direct path between SCS and PA in the direct model remained non-significant for both males and females (Figure 17). The mediational analysis was conducted, and the essential path from CAMM to PA remained non-significant for females, and therefore no further mediational analyses were conducted with this sub-group. However, all paths were significant for males. Further, for males the magnitude of the direct path *increased* from the direct model to the mediated model. This increase implied suppression (Cheung & Lau, 2008; Conger, 1974). The bootstrapping procedure was performed with the male sample to test whether

this increase was due to sampling error or suppression, and results indicated a statistically significant suppression effect (indirect β = 0.40, $p < .01$, 95% CI [0.10, 0.69]). Mindfulness can therefore be said to suppress the relationship between self-compassion and positive affect in males.

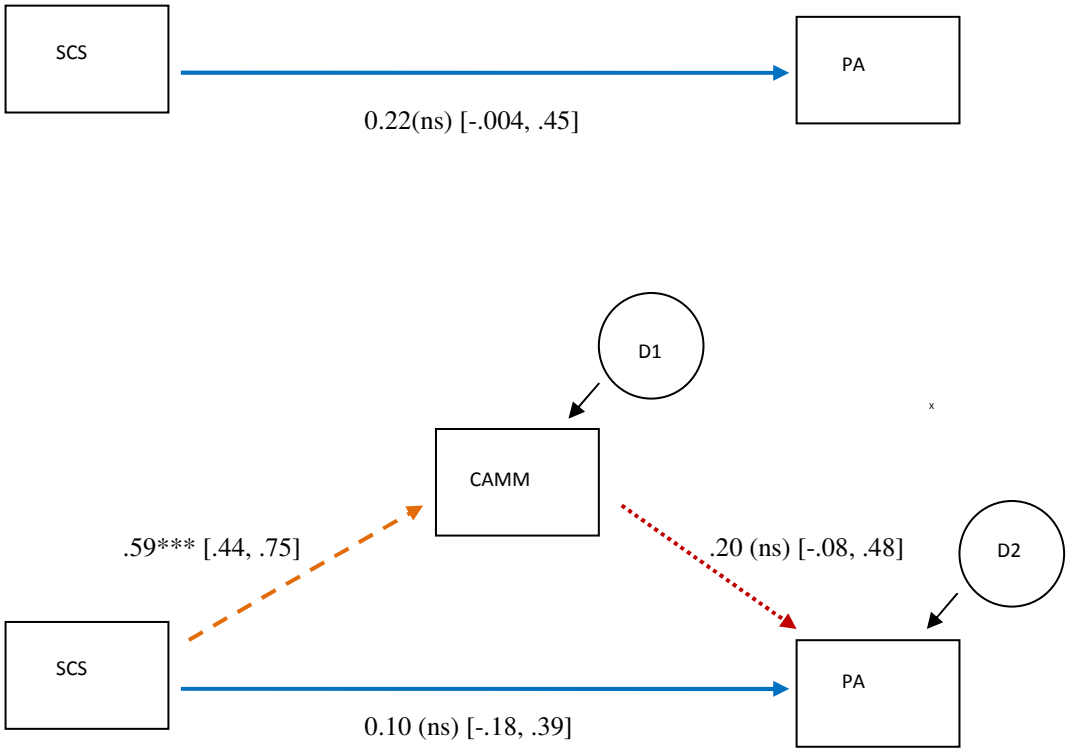


Figure 16. Alternate model with SCS as independent variable, CAMM as mediator, and PA as the dependent variable

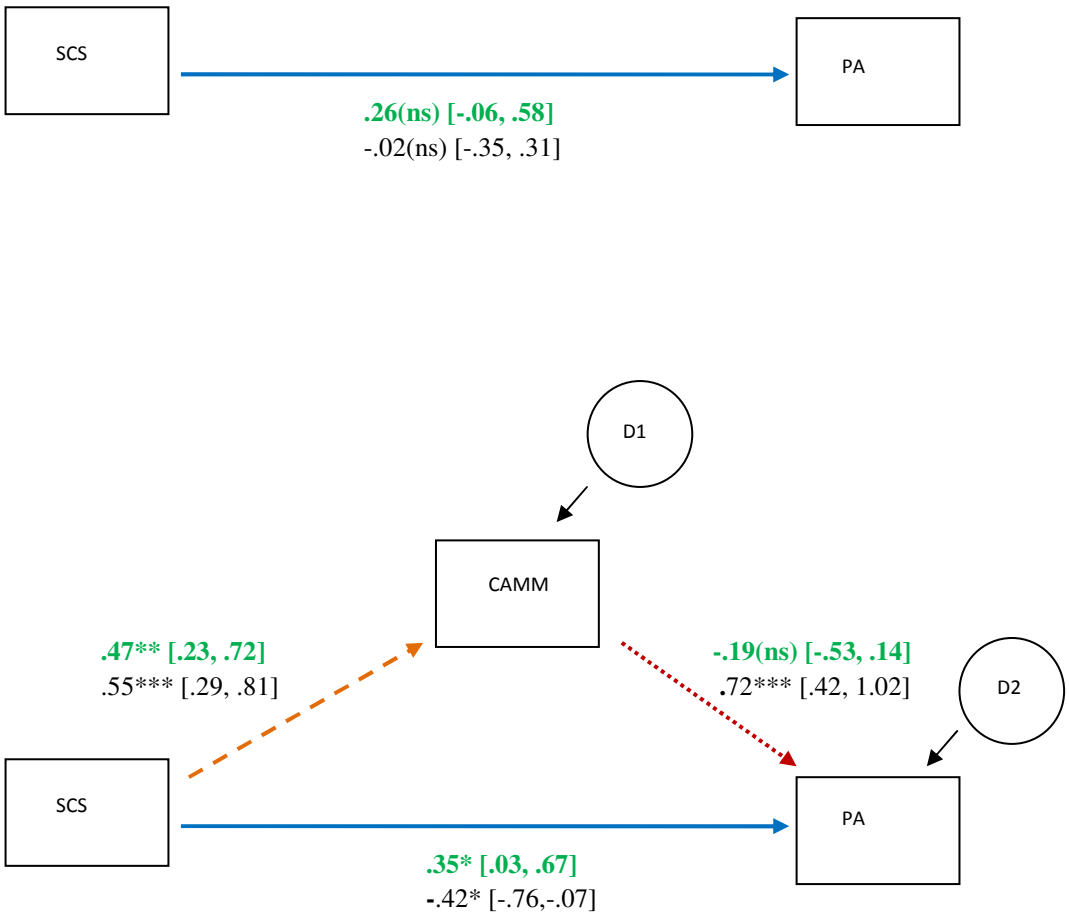


Figure 17. Alternate model split by gender; female results are first and in boldface; SCS is independent variable, CAMM is mediator, and PA is the dependent variable

Negative affect. In contrast to that of PA, when the whole group was considered, the direct path was statistically significant and in the expected direction when negative affect was entered as the dependent variable. Mediational analysis demonstrated that all paths were statistically significant, and that there was a decrease in the magnitude of the direct path from the

direct model to the mediated model, indicating the possibility of mediation (Figure 18). Bootstrapping analysis was then conducted to determine whether this decrease in magnitude was statistically significant, i.e. c - c′ was statistically different than zero. Results indicated that the mediated path was statistically significant (indirect β = –0.21, $p < .01$, 95% CI [-0.34, -0.05]), demonstrating that mindfulness (CAMM) does partially mediate the relationship between self-compassion (SCS) and negative affect (NA) in this sample.

The mediational analysis was then conducted with gender as a moderator, and results indicated a statistically significant direct path in the direct model for both males and females (Figure 19). In the mediated model, the path from CAMM to NA was non-significant for males, and therefore no further mediational analyses were conducted with this group. For females,

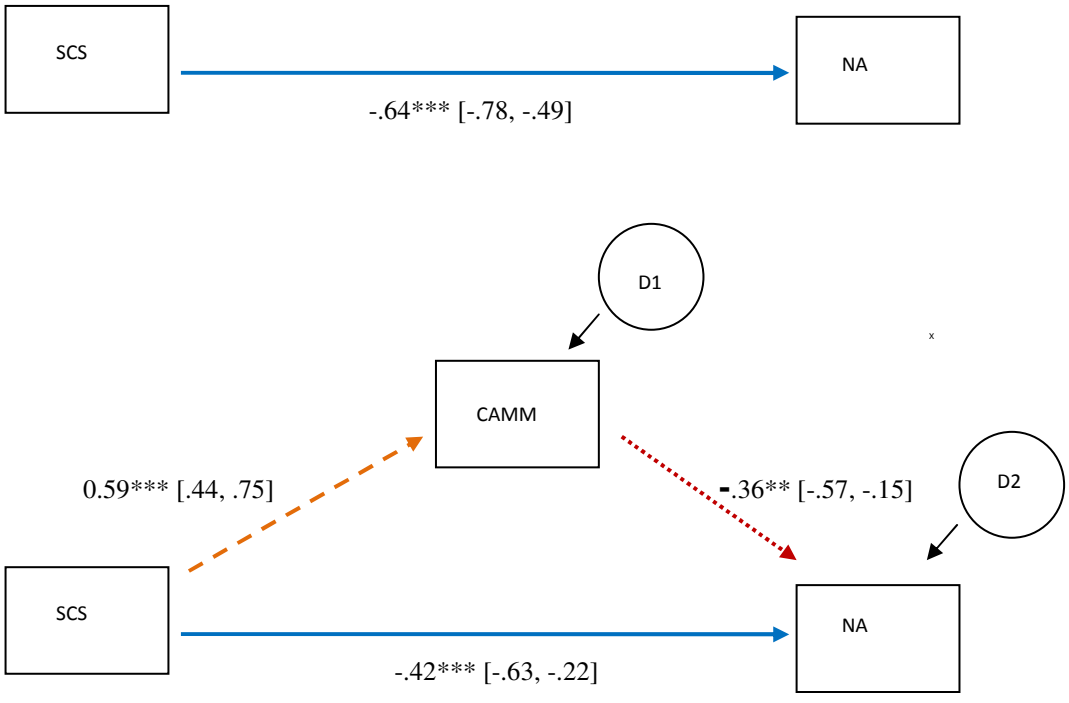


Figure 18. Alternate model with SCS as independent variable, CAMM as mediator, and NA as dependent variable

however, all paths were statistically significant, and there was a decrease in the magnitude of the direct path from the direct model to the mediated model, indicating potential mediation. Bootstrapping was then conducted on this subsample, and results indicated a statistically significant mediated path (indirect β = -0.22, $p < .05$, 95% CI [-0.39, -0.04]). Therefore, mindfulness partially mediates the relationship between self-compassion and negative affect for this female sample.

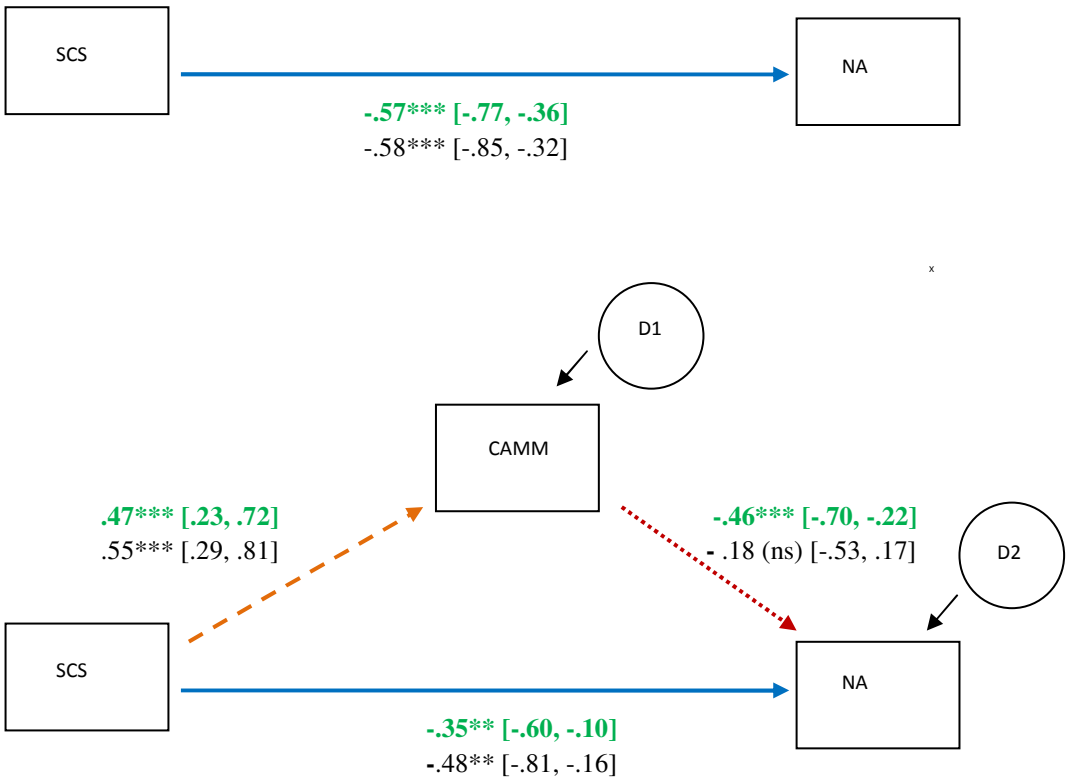


Figure 19. Alternate model split by gender; female results are first and in boldface; SCS is independent variable, CAMM is mediator, and NA is dependent variable

Life satisfaction. When life satisfaction (SLSS) was introduced as the dependent variable in the alternate model, results indicated a statistically significant direct path in the direct model. When the analysis on the mediated model was conducted, results demonstrated that the direct path was reduced and was now non-significant, while the other paths were statistically significant, indicating potential mediation (Figure 20). Bootstrapping analysis then indicated that the indirect path was statistically significant (indirect $\beta = -.33$, $p < .01$, 95% CI [0.18, 0.47]). Since the direct path is non-significant in the mediated model, mindfulness (CAMM) can be said to fully mediate the relationship between self-compassion (SCS) and life satisfaction (SLSS) in this adolescent sample.

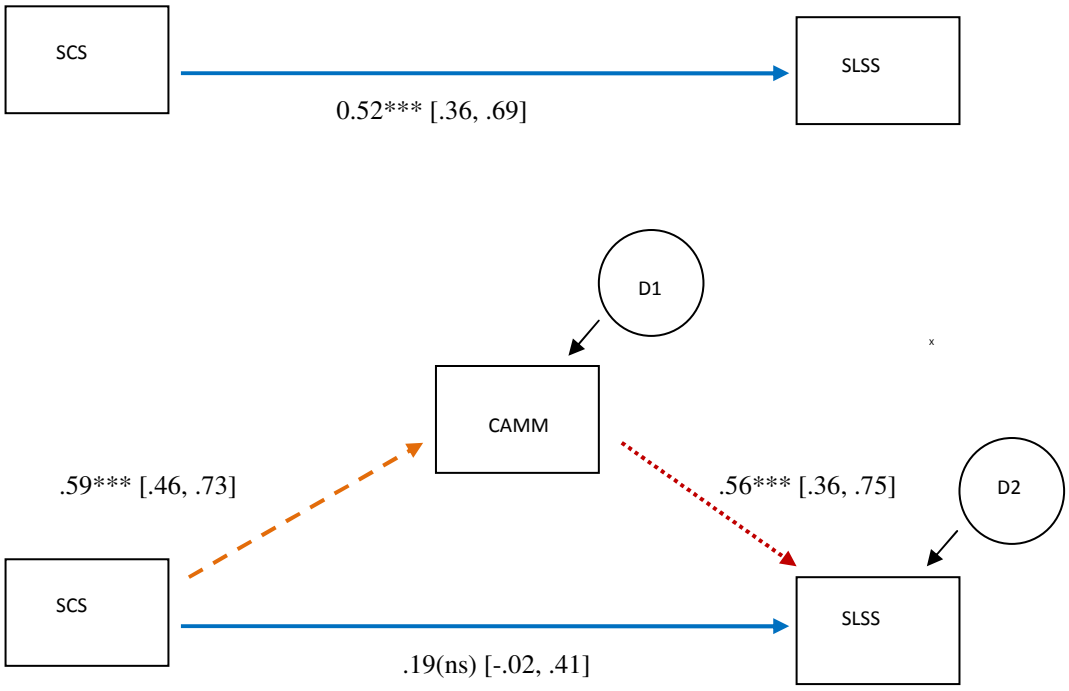


Figure 20. Alternate model with SCS as independent variable, CAMM is mediator, and SLSS is the dependent variable

The mediational analysis was then conducted for males and females separately, and there was an initial statistically significant direct path for both genders (Figure 21). In addition, there was a decrease in magnitude of the direct path in the mediated model to non-significance for both genders, indicating potential full mediation. Bootstrapping results confirmed a statistically significant mediated path for females only; mediated path for males was non-significant (indirect $\beta = 0.29$, $p < .01$, 95% CI [0.09, 0.49]; $\beta = 0.24$, $p = .07$, 95% CI [-0.02, 0.49], respectively).

Perceived stress. Perceived stress (PSS) was then entered as the dependent variable in this analysis of an alternate model. Results indicated a statistically significant direct path in the direct model which then decreased in magnitude in the mediated model, while other paths were

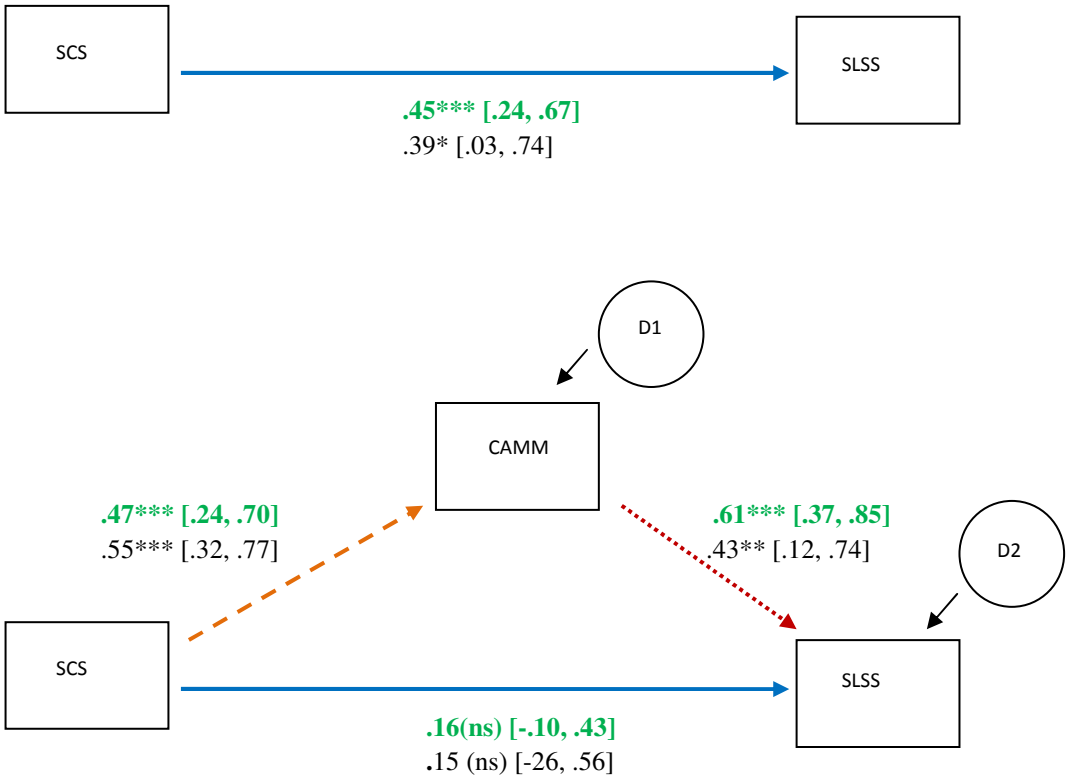


Figure 21. Alternate model split by gender; female results are first and bolded; SCS is independent variable, CAMM is mediator, and SLSS is dependent variable

statistically significant, indicating potential mediation (Figure 22). Bootstrapping analysis demonstrated the estimation for the indirect path was statistically significant (indirect β = -0.18, $p < .01$), 95% CI [-0.30, -0.06]). Therefore, it can then be concluded that mindfulness (CAMM) partially mediates the relationship between self-compassion (SCS) and perceived stress (PSS) in this sample.

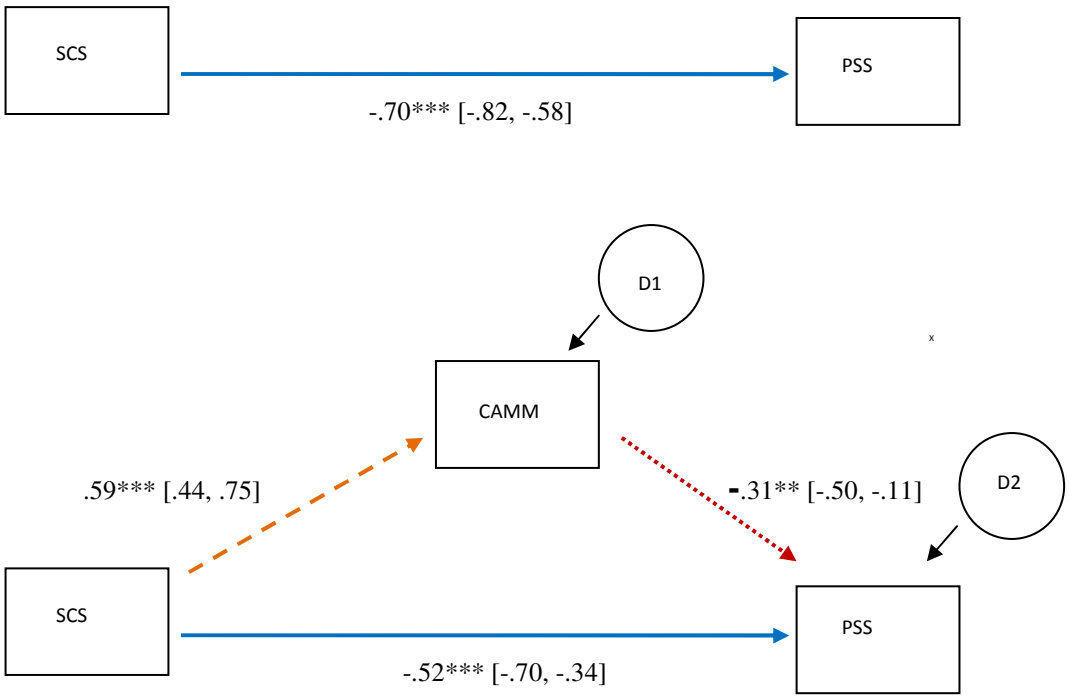


Figure 22. Alternate model with SCS as independent variable, CAMM as mediator, and PSS as the dependent variable

When mediational analysis was conducted for males and females separately, results indicated a statistically significant direct path for both males and females in the direct model (Figure 23).

In the mediated model, the CAMM to PSS path was non-significant for males, so no further analyses were conducted. For females, all paths were statistically significant and there

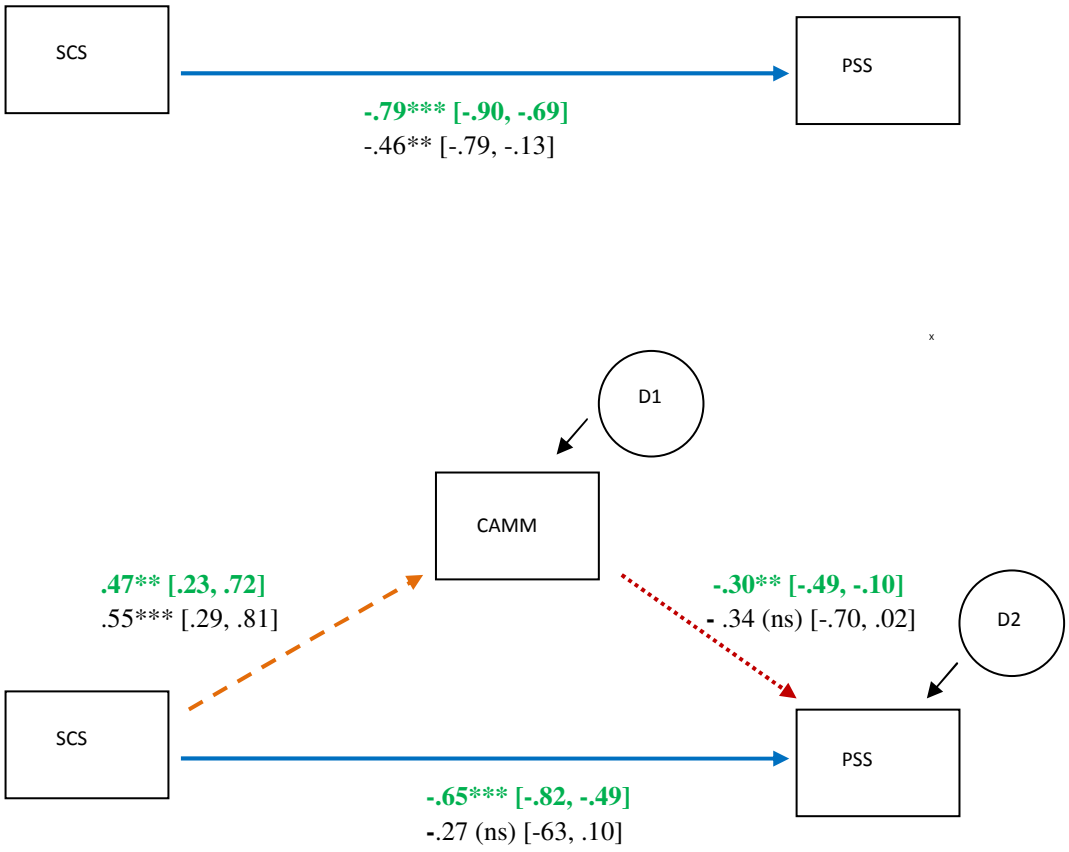


Figure 23. Alternate model split by gender; female results are first and bolded; SCS is independent variable, CAMM is mediator, and PSS is dependent variable

was a decrease in magnitude in the direct path. Bootstrapping results demonstrated a statistically significant mediated path (indirect $\beta = -0.14$, $p < .05$, 95% CI [-0.27, -0.01]). Mindfulness therefore partially mediates the path between self-compassion and perceived stress in this female sub-group.

Chapter 5 - Discussion

Previous research on mindfulness supported positive well-being outcomes for adults; however, the research on mindfulness in adolescents is limited (Burke, 2009). Moreover, research in mindfulness is only beginning to explore the mechanisms through which mindfulness may effect change (Baer, 2010c). Self-compassion has been investigated as a mechanism, or mediator, in several studies which measured mindfulness in a yoga and MBSR-type intervention with adults (Gard et al., in press; Kuyken et al., 2010, respectively) and in a correlational study with adolescents (Neff & McGehee, 2010). Recognizing that adolescents often have negative self-judgments (Harter, 1993; Simmons et al., 1973), frequently comparing themselves to peers to determine their position in the social hierarchy (Neff & Vonk, 2008), it was posited that self-compassion may serve as a way in which mindfulness in adolescents relates to emotional well-being. Thus, the purpose of this study was to investigate the role of self-compassion as a mediator in the relationship between mindfulness and emotional well-being outcomes in adolescents.

The sample of 39 females and 28 males was recruited from a local high school with a diverse race/ethnicity and income level. An online survey comprised of six scales measuring mindfulness, self-compassion, positive affect, negative affect, life satisfaction and perceived stress was administered in the school library. The hypothesized models were tested using path analysis, and an alternate model was explored as well.

Prior to investigating the research questions, demographic variables were inspected. When the four well-being outcomes were regressed on the demographic variables, there was a statistically significant difference in the results for males and females with respect to negative

affect, life satisfaction, and perceived stress. For this reason, research questions were explored for males and females separately, as well as for the group as a whole.

The first objective of this study was to investigate the relationship between mindfulness and dimensions of emotional well-being, specifically positive affect, negative affect, life satisfaction and perceived stress in an adolescent population. Previous research reported positive associations with positive affect and life satisfaction, and negative associations with negative affect and perceived stress (Biegel et al., 2009; Broderick & Metz, 2009; K. W. Brown & Ryan, 2003; Ciarrochi et al., 2010; Schonert-Reichl & Lawlor, 2010), and therefore similar correlations were expected in this study. Inspection of the correlation matrix indicated that there was a statistically significant relationship in the expected direction between mindfulness and each of the four well-being measures. Specifically, an increase in adolescents' mindfulness was associated with an increase in positive affect and satisfaction with life, and with a decrease in negative affect and perceived stress. However, when this relationship was investigated with gender as a moderator, an interesting finding emerged. The relationship between mindfulness and positive affect for females was no longer statistically significant, meaning that for this sample of adolescent girls, as mindfulness increased, there was no evidence that their positive affect improved, as it did with their male counterparts. Interestingly, upon investigation of differences between males and females on outcome variables (see Table 8), there was not a statistically significant difference between males and females in positive affect. Therefore, although this group of males and females were statistically the same in their degree of positive affect, becoming more mindful is associated with increased positive affect for males, yet not for females.

The second objective of this study was to examine the potential mediating role of self-compassion in the relationship between mindfulness and dimensions of emotional well-being. Prior to conducting meditational analyses, the correlation matrix was again examined to determine the relationship between self-compassion and the each of the other variables. Prior research suggested that self-compassion would be associated positively with mindfulness, positive affect and life satisfaction, and negatively with negative affect and perceived stress (Shapiro et al., 2005; Shapiro et al., 2007). As expected, there was a statistically significant positive association between self-compassion and mindfulness; as adolescents' mindfulness increased, level of self-compassion increased as well. In addition, self-compassion was significantly positively correlated with life satisfaction; as adolescents were more self-compassionate, they are more satisfied with their lives. Self-compassion was significantly negatively correlated with negative affect and perceived stress, as expected; as adolescents' self-compassion increased, their negative affect and perceived stress decreased. Additionally, there was no statistically significant correlation between self-compassion and positive affect. Self-compassion does not appear to be associated with positive mood in this group of adolescents. It is important to recognize that a causal relationship cannot be supported by correlation coefficients, i.e. we cannot assume that mindfulness is causing an increase in self-compassion; the reverse may be true. Correspondingly, self-compassion cannot be assumed to initiate an increase in life satisfaction or a decrease in negative affect or perceived stress.

Next, the relationship between self-compassion and all other variables was investigated separately for males and females. Results indicated a statistically significant difference between males and females in the correlation between self-compassion and perceived stress (see Table 14), in that the inverse relationship between self-compassion and perceived stress for females

was significantly greater (see Table 13). Females' perceived stress appears to be more related to their degree of self-compassion than that of males.

Thus, from this initial inspection of the correlational matrix, it is evident that there are strong associations between mindfulness and well-being outcomes, and with the exception of positive affect, between self-compassion and well-being outcomes. Not surprisingly, there were also statistically significant differences between males and females in these relationships, with females being more likely to experience stress in the absence of self-compassion and less likely to experience positive affect in the presence of mindfulness.

Self-compassion as mediator

The exploration of self-compassion as a mediator was examined next. Self-compassion was found to explain significantly the relationship between mindfulness and both negative affect and perceived stress in the whole sample. This result is similar to that of Neff and McGehee (2010) which reported self-compassion to mediate the relationship between family functioning and positive well-being in adolescents. When the group was separated by gender, it became apparent that self-compassion did not, in fact, have a mediating relationship with perceived stress for males, as it did for females. Additionally, the mediating relationship with negative affect was fully explained by self-compassion in males. Being more attentive, aware, and accepting of that which one is facing in the moment may allow adolescents to become kinder and less critical of themselves, relieving stress and negative moods in females, and obviating negative moods in males. It is conceivable that when adolescents become increasingly aware of their thoughts, they recognize the degree to which these thoughts are self-critical and hence harmful, and therefore take steps to treat themselves with greater kindness. This ultimately may lead to improved emotional well-being.

Interestingly, the outcomes that are significantly mediated by self-compassion are the two that are constructs with negative connotations, i.e. negative affect and perceived stress. It appears that in this adolescent sample, being kinder and more accepting of oneself is associated more with a decrease in negative outcomes than in an increase in positive outcomes. This may be attributed to either a genuine greater effect of self-compassion on ameliorating these negative outcomes, or because adolescents relate more acutely to the negative items on the scales, and therefore respond more assuredly. Moreover, when the self-compassion scale was separated into its subscales and correlated with the outcome measures (see Table 15), the correlations are much stronger with the negative subscales than with that of the positive. This lends support to the conclusion that adolescents may feel more confident when answering items about their negative affect or stress levels than with their positive affect or a sense of satisfaction with their lives.

Alternate Model

The third objective of this study was to explore other possible models to determine whether self-compassion as mediator is the only possible way of conceptualizing the relationships among these constructs. The alternate model of self-compassion as predictor and mindfulness as mediator was therefore explored. When investigating the sample as a whole, these analyses revealed that mindfulness did, in fact, partially mediate the relationship between self-compassion and negative affect and self-compassion and perceived stress, and fully mediate the relationship between self-compassion and life satisfaction.

However, when the group was separated by gender, mindfulness served different mediator functions with males and females. Mindfulness served as a mediator for females with negative affect, perceived stress, and life satisfaction. With males, however, mindfulness had a suppression effect on the relationship between self-compassion and positive affect. In other

words, when mindfulness was not controlled, there was a decreased association between self-compassion and positive affect. It appears that being accepting of both oneself and the present moment might be how self-compassion lowers negative affect and perceived stress, and raises life satisfaction for females. On the other hand, in males, self-compassion only was associated with positive affect because of its relationship with aspects of mindfulness. Note that when conceiving the constructs as they are in this alternate model, the component of mindfulness that seems to emerge as most salient is that of acceptance, rather than awareness. This is consistent with previous research which found that acceptance subscale to be the component of mindfulness that differed when comparing clinical to non-clinical samples (Cardaciotto et al., 2008). Hence it is possible that when adolescents are less self-critical and see themselves as part of a greater humanity, they are more able to accept themselves and their present situation, seeing their own shortcomings and momentary frustrations as part of a natural course, rather than an experience that is unique to them. It is then possible that this understanding, this self-acceptance, can lead to less stress and greater emotional well-being.

Thus, in this group of adolescents, both mindfulness and self-compassion serve as mediators of emotional well-being. In a recent study, Gard and colleagues (in press) found both mindfulness and self-compassion to be mediators when investigating measures of quality of life and perceived stress in young adults who had experienced a 4-month long residential yoga intervention. Mindfulness and self-compassion were also determined to be mediators of well-being in a study involving a Mindfulness Based Cognitive Therapy (MBCT), a mindfulness-type intervention study that is tailored to those with chronic depression (Kuyken et al., 2010). How do mindfulness and self-compassion mediate these dimensions of emotional well-being?

With the knowledge that both mindfulness and self-compassion can serve as mediators, it is plausible that there is a reciprocal association and iterative dynamic between mindfulness and self-compassion in that the awareness and attention that mindfulness supports allows one to become more aware of thoughts. This awareness then leads to recognition of the degree to which one is self-judging and ruminating, or overidentifying with negative thoughts. This pattern may be particularly salient for adolescents who frequently engage in comparing themselves to others and often have negative self-images (Harter, 1993; Simmons et al., 1973; Steinberg, 1999). This new awareness of the degree to which one is self-critical may then bring about a desire to be kinder to oneself and more self-compassionate. Through this, adolescents may then learn to be more accepting of themselves, not judging themselves so harshly, understanding that their flaws do not have to define or overwhelm them. In fact, their imperfections may be seen as part of what makes them who they are, and as such, they are part of a common humanity of flawed individuals (Figure 24).

How then does this interchange between components of mindfulness and self-compassion then lead to increased emotional well-being? An awareness and acceptance of one's own imperfections and an understanding that as part of being human, we are all flawed, can lead adolescents to have greater compassion for others' imperfections, recognizing that if their own flaws are forgivable, then others' flaws may be as well. Adolescents may be more willing to let go of potentially conflicting situations with friends, for example, thereby leading to less social pressure and stress among peers. In academic settings, a low test grade may be seen as a learning experience, an opportunity to acknowledge the need to study more, rather than a time to berate oneself for poor performance.

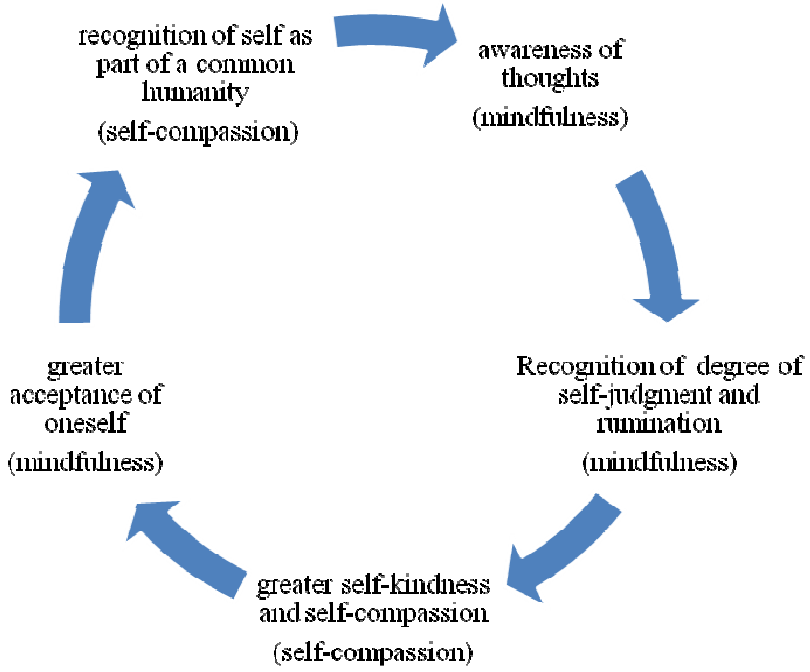


Figure 24. Proposed model of reciprocal association between mindfulness and self-compassion

This decreased conflict with others and with oneself would lead to decreased stress and negative affect, and improved emotional functioning (Lazarus, 2006). Greater interpersonal connection can act as a buffer against a fear of social rejection (Collins, 1997) leading to an overall greater satisfaction with one's life. Items such as "My life is going well" and "I have a good life", items from the life satisfaction scale, are more likely to be responded to in the affirmative if relationships among friends are more stable and one experiences less stress and conflict in their day-to-day lives. A proposed empirical model of the relationships among these variables is provided (Figure 25).

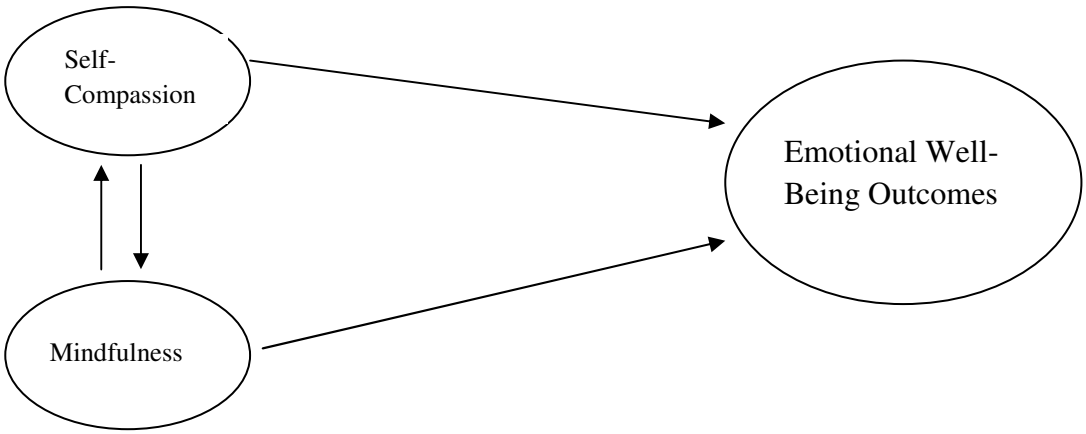


Figure 25. New proposed model with reciprocal association between mindfulness and self-compassion

Summary of Study Results

In summary, results of this study support several conclusions: First, there was a statistically significant relationship between mindfulness and four emotional well-being outcomes for males; for females, mindfulness was not related to positive affect, but was related to the other emotional well-being variables. Second, self-compassion mediated the relationship between mindfulness and negative affect for both males and females, and with perceived stress for females. Third, investigation of an alternate model revealed that in the female subsample, mindfulness served as a mediator with negative affect, life satisfaction, and perceived stress, and in the male subsample, mindfulness had a suppression effect on the relationship between self-compassion and positive affect only (see Table 16). This led to the supposition that self-compassion and mindfulness may interact in an iterative and dynamic process which culminates in improved emotional well-being.

Table 16

Summary of Mediation Results for Original and Alternate Model

	Self-compassion as mediator (original model)			Mindfulness as mediator (alternate model)		
	Whole group $N = 67$	Males $n = 28$	Females $n = 39$	Whole group $N = 67$	Males $n = 28$	Females $n = 39$
PA	None	None	None	None	Suppression	None
NA	Partial	Full	Partial	Partial	None	Partial
SLSS	None	None	None	Full	None	Full
PSS	Partial	None	Partial	Partial	None	Partial

Note. Partial indicates partial mediation; full indicates full mediation

Further, the differences in responses of males and females should be noted. Overall, adolescent males appeared to be less sensitive to the mediating effect of both self-compassion and mindfulness than did females. In the male subsample, mediation was present in only one of the possible eight models. In contrast, mediation was present in five of the possible eight models in the female subsample. Surprisingly, no previous research of which I am aware examines differences between males and females with respect to the constructs of mindfulness and self-compassion.

In addition to addressing the gap in this literature with respect to gender differences, this study is one of the first to examine mindfulness and self-compassion as mechanisms in an

adolescent sample; prior to this, research has focused primarily on the pathways to well-being in adults. Moreover, most of the research has been based on intervention studies with adults. Few studies have solely examined levels of self-compassion, mindfulness and emotional well-being in a correlational study.

Limitations of the Study

Although this study contributes to the limited literature on mindfulness, self-compassion and adolescents by proposing a reciprocal interaction between mindfulness and self-compassion, there are a number of limitations that should be noted. First, the sample size was small. This decreases statistical power, and threatens external validity. With a sample size of only 67, particularly with only 28 males, it is possible that this sample is not representative of adolescents, or even of the students at the particular high school, and therefore these results may not generalize to the adolescent population as a whole.

Second, an additional threat to external validity is that the sample was self-selected. It is possible that the incentive of winning an iPad might appeal to certain types of students. Further, although there were numerous announcements, flyers, phone calls and emails to inform students of the study, when some were asked why they did not participate, their response was that they were unaware of the opportunity. It is therefore plausible that those students who listen to announcements and notice flyers in the school hallway may have certain traits that imply that they are not representative of adolescents in general.

Third, a potential limitation is that the mindfulness measure and self-compassion measure may have some degree of overlap theoretically. There is some question as to whether the items on the measures would not cross-load if factor analyzed. It might be suggested that this analysis be conducted in future studies which utilize both the mindfulness and self-compassion measure.

Fourth, according to the parameters set by the school district, students were able to take the survey only during restricted times when they might otherwise be socializing. In other words, they would have had to forfeit spending time with friends in order to participate in the study. For adolescents who generally place significant value on their time spent with peers, this would be a deterrent to participation. A number of adolescents related that if they were able to take the survey during class time, they would have participated.

Fifth, although the school administration, librarian, and some teachers were supportive of the study, others were not. For example, although the initial consent forms were brought to the school prior to the beginning of the school day so that teachers could collect them and send them home with students that day, it took at least one teacher three days to send the forms home, and this took place only after she was contacted by the guidance office. Apparently because English is the only class that all students in the school are required to take, all school-parent written communication goes through the English teachers. It is understandable that English teachers might not want to take class time to distribute forms, and may even resent doing so. Had teachers known more about this project, been supportive of it, and discussed it with their students, it is conceivable that this may have impacted not only the number of participants but the representation of students as well.

Sixth, the model with reciprocal association between mindfulness and self-compassion could not be tested because it was not identified. In order for a model to be identified that has two variables with a reciprocal relationship, one of the variables must have a predictor variable or the disturbance terms must be correlated (Kline, 2011). In this study, no predictor variable for either mindfulness or self-compassion was measured, and in path analysis, disturbance terms must remain uncorrelated.

Finally, all data for this study were collected at one point in time. Ideally, mediation studies should be conducted at three distinct time points; the first to measure the predictor construct, the second to measure the potential mediator, and the third to measure the outcome variables. This allows for discernment of the impact of one variable on another, important when considering mediation (MacKinnon, 2008).

Implications for Research

There are a number of noteworthy implications for research that have emerged from this study. First, this study should be replicated with a larger sample. Not only would this allow for more confidence in generalizing of results, but it would make it possible to use a full structural model, rather than a path analysis model, to estimate parameters. Doing so would allow for correlation of error terms, and the model depicting a reciprocal relationship between mindfulness and self-compassion would then be identified and could be tested.

Second, in order to resolve the issue of temporal ambiguity, a future study should collect data at three separate time points. This would facilitate elucidating the direction of effect, and may offer evidence for a causal relationship between the variables. It may also help clarify the theorized reciprocal relationship between mindfulness and self-compassion.

Third, future research could extend and expand the investigation of the relationship among the constructs of mindfulness, self-compassion and dimensions of emotional well-being by introducing a mindfulness intervention. In this study, participants would learn practices and techniques to become more mindful. Measures assessed at three time points (i.e. pre-intervention, post-intervention, and follow-up) would likely add variability to the participants' responses, since participants' mindfulness would probably be affected to varying degrees by the intervention, thus increasing variability in mindfulness, and likely in the other variables as well.

By increasing participants' levels of mindfulness, it may become easier to detect and measure an ensuing increase in self-compassion, for example.

Moreover, this intervention study could be extended by tracking the adolescents who received the mindfulness intervention over several years. At certain time intervals various behaviors could be measured including bullying, substance abuse, academic engagement, and school violence to see if the increase found in emotional well-being related to an improvement in both behavior and their interpersonal relationships. The ultimate goal in improving individuals' emotional well-being is to have a positive influence on interactions with others, including peers, family, teachers, and members of the community. Additionally, a variation of this study could extend the mindfulness intervention to a year-long class in a school setting to see if the outcomes of the intervention were affected by the "dose" of mindfulness provided.

In addition, it may be informative for future research to measure emotion regulation as a potential mediator. Emotion regulation has been shown to correlate with both mindfulness and positive well-being in previous research (Baer, 2010a), but has yet to be measured in adolescents. Evidence of emotion regulation as a mediator may help to fine tune the development of a self-compassion or mindfulness intervention for adolescents.

Finally, this is the first study of which I am aware that explores the relationships among the specified constructs by gender. Since findings in this study indicate that adolescent males and females differ in how they relate to mindfulness, self-compassion, and dimensions of emotional well-being, future mindfulness and self-compassion research should take this into consideration. Researchers conducting studies which investigate these constructs with any age group should examine results for each gender separately, as the differences found in this study between males and females might not be limited to adolescents.

Implications for Practice

This study provides evidence for a significant association between mindfulness, self-compassion, and some emotional well-being outcomes in adolescents. As levels of mindfulness and self-compassion increase, adolescents tend to be less stressed and feel more positive about their lives. With this knowledge, parents, teachers, and others who interface with adolescents can begin to cultivate an environment in which being kind to oneself is encouraged, and where developing connections and relationships with others is a priority. Rather than criticizing adolescents for their mistakes, for example, an alternative tactic may be to acknowledge that a mistake has been made and help clarify a way to correct the error, while simultaneously recognizing that it is inherent in our nature as human beings to fail at times. Moreover, it can be communicated to the adolescent that he or she is in a large company of others who regularly stumble, falter, and fail, and then ultimately are able to endure – and even thrive - despite their inadequacies.

An intervention that introduces mindfulness skills from a self-compassion perspective can be created that focuses on the needs and perspectives of adolescents. Currently a similar program is being developed for adults. Dr. Christopher Germer of Harvard Medical School and Dr. Kristin Neff of University of Texas, Austin, creators of the Mindful Self-Compassion (MSC) program, recently completed a randomized controlled trial evaluating this program. Findings demonstrated an increase in participants' life satisfaction, and a decrease in depression, stress and anxiety, in addition to increased compassion for themselves and others (Neff & Germer, under review). Offering a similar program tailored to adolescents could provide one way of alleviating stress and its repercussions for those navigating this potentially challenging developmental stage. Adaptations can be made to the MSC program which would be appropriate

for adolescents. For example, one activity in Germer and Neff's Mindful Self-Compassion program asks participants to first decide on a behavior that they would like to change; the example that is provided is not paying bills on time. The next step is to become aware of the inner voice that responds with judgment when this happens, e.g. I'm a failure, why can't I remember to pay bills? Following this, the participant asks oneself about why paying bills might be difficult or stressful, and then respond with a compassionate voice, e.g. paying bills is stressful and everyone tries to avoid stress; this is part of being human (Germer & Neff, in preparation).

However, this extensive thought process may be too involved for adolescents. Bringing awareness to one's inner judgmental voice would likely be eye-opening for adolescents; the realization of the extent to which they are self-critical and therefore cause undue harm to their sense of self would likely initiate a sufficient shift in the way in which they relate to themselves. For example, each time adolescents become aware of this inner critical voice, they can be taught to soothe themselves by responding as they would to a friend. If the inner voice states, "That low grade on the test proves you're dumb," the adolescent can say to herself, "Everyone has trouble from time to time on tests. It's ok. Just remember to study more next time." In other words, adolescents can develop a voice which cultivates the elements of self-compassion, including self-kindness, recognizing that they are not alone in their inadequacies and mistakes, and to hold their challenging experiences with a sense of balance and equanimity.

Conclusion

The adolescent period can be challenging, fraught with negative self-evaluation and self-judgment. In this study, it was hypothesized that mindfulness could help adolescents through this difficult developmental stage by providing a pathway to emotional well-being, and self-

compassion was hypothesized to be the way in which mindfulness achieved these results. Findings indicated that both mindfulness and self-compassion function as mediators to emotional well-being, and it was theorized that the two constructs engage in a dynamic iterative process which culminates in improved well-being in adolescents. With this knowledge, an intervention can be created that teaches adolescents to be both more mindful and self-compassionate, thereby leading to overall improvements in their emotional health. Implications might include a decrease in youth maladaptive trajectories including substance abuse, youth violence, bullying behaviors, and school absenteeism.

List of References

Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology-Science and Practice, 10*(2), 125-143. doi: 10.1093/clipsy/bpg015.

Baer, R. A. (2010a). Mindfulness- and acceptance-based interventions and processes of change. In R. A. Baer (Ed.), *Assessing mindfulness and acceptance processes in clients: Illuminating the theory and practice of change*. Oakland, CA: New Harbinger Publications, Inc.

Baer, R. A. (2010b). Self-compassion as a mechanism of change in mindfulness and acceptance-based treatments. In R. A. Baer (Ed.), *Assessing mindfulness and acceptance based processes in clients: Illuminating the theory and practice of change*. Oakland, CA: New Harbinger Publications, Inc.

Baer, R. A. (2011). Measuring mindfulness. *Contemporary Buddhism, 12*, 241-261.

Baer, R. A. (Ed.). (2010c). *Assessing mindfulness and acceptance processes in clients: Illuminating the theory and practice of change*. Oakland, CA: New Harbinger Publications.

Baer, R. A., Smith, G. T., & Allen, K. B. (2004). Assessment of mindfulness by self-report - The Kentucky inventory of mindfulness skills. *Assessment, 11*(3), 191-206. doi: 10.1177/1073191104268029

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*(1), 27-45. doi: 10.1177/1073191105283504.

Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., . . . Williams, J. M. G. (2008). Construct validity of the five facet mindfulness questionnaire in meditating and nonmeditating samples. *Assessment, 15*(3), 329-342. doi: 10.1177/1073191107313003.

Bailey, M. (2011). *Parenting your stressed child*. Oakland, CA: New Harbinger Publications.

Baron, R., & Kenny, D. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6).

Bartsch, H., Bartsch, C., Simon, W. E., Flehmig, B., Egels, I., & Lippert, T. H. (1992). Antitumor activity of the pineal gland: Effect of unidentified substances versus the effect of melatonin. *Oncology, 49*, 27-30.

Beauchemin, J., Hutchins, T., & Paterson, F. (2008). Mindfulness meditation may lesson anxiety, promote social skills, and improve academic performance among adolescens with learning disabilities. *Complementary Heallth Practice Review, 34*, 34-45.

Biegel, G., Brown, K., Shapiro, S., & Schubert, C. (2009). Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized clinical trial. *Journal of Clinical and Consulting Psychology*.

Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., . . . Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology-Science and Practice, 11*(3), 230-241. doi: 10.1093/clipsy/bph077.

Blakemore, J., Berenbaum, S., & Liben, L. (2009). *Gender development*. Clifton, NJ: Psychology Press.

Boguls, S., Hoogstad, B., van Dun, L., de Schutter, S., & Restifo, K. (2008). Mindfulness training for adolescents with externalizing disorders and their parents. *Behavioral and Cognitive Psychotherapy, 36*.

Boguls, S., Sijbers, G. F., & Voncken, M. (2006). Mindfulness and task concentration training for social phobia: a pilot study. *Journal of Cognitive Psychotherapy: An International Quarterly, 20*, 33-44.

Bootzin, R., & Stevens, J. (2005). Adolescents, substance abuse, and the treatment of insomnia and daytime sleepiness. *Clinical Psychology Review.Special Issue: Insomnia and Behavioral Sleep Medicine, 25*(5), 629-644.

Borenstein, M., Hedges, L. V., Higgens, J. P. T., & Rothstein, H. R. (2009). *Introduction to meta-analysis*. Chichester, U.K.: Wiley.

Britton, W., Bootzin, R., Cousins, J., Hasler, B., Peck, T., & Shapiro, S. (2010). The contribution of mindfulness practice to a multicomponent behavioral sleep intervention following substance abuse treatment in adolescents: A treatment-development study. *Substance Abuse, 31*(2), 86-97. doi: 10.1080/08897071003641297.

Broderick, P., & Metz, S. (2009). Learning to BREATHE: A pilot trial of a mindfulness curriculum for adolescents. *Advances in school mental health promotion, 2*(1), 35-46.

Brown, B., & Lohr, M. J. (1987). Peer-group affiliation and adolescent self-esteem: An integration of ego-identity and symbolic-interaction theories. *Journal of Personality and Social Psychology, 52*, 47-55.

Brown, K., West, Loverich, & Biegel. (2011). Assessing adolescent mindfulness: Validation of an adapted Mindful Attention Awareness Scale in adolescent normative and psychiatric populations. *Psychological Assessment*. doi: 10.1037/a0021338.

Brown, K., West, A., Loverich, T., & Biegel, G. (2011). Assessing adolescent mindfulness: Validation of an adapted mindfulness attention awareness scale in adolescent normative and psychiatric populations. *Psychological Assessment*. doi: 10.1037/a0021338.

Brown, K. W., & Ryan, R. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*(4), 822-848. doi: 10.1037/0022-3514.84.4.822.

Brown, K. W., & Ryan, R. (2004). Perils and promise in defining and measuring mindfulness: Observations from experience. *Clinical Psychology: Science and Practice, 11*, 242-248.

Brown, K. W., Ryan, R., & Cresswell, J. D. (2007). Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological Inquiry, 18*(4), 211-237.

Buchheld, N., Grossman, P., & Walach, H. (2001). Measuring mindfulness in insight meditation (Vipassna) and meditation-based psychotherapy: the development of the Freiburg Mindfulness Inventory (FMI). *Journal for Meditation and Meditation Research 1*, 11-34.

Burke, C. A. (2009). Mindfulness-based approaches with children and adolescents: A preliminary review of current research in an emergent field. *Journal of Child and Family Studies, 19*(2), 133-144. doi: 10.1007/s10826-009-9282-x.

Burke, C. A. (2010). Mindfulness-based approaches for children and adolescents: A preliminary review of current research in an emergent field. *Journal of Child and Family Studies, 19*(2), 133-144.

Campbell, A., Converse, P., & Rodgers, W. (1976). *The quality of American life*. New York, NY: Russell Sage Foundation.

Cardaciotto, L., Herbert, J., Forman, E., Moitra, E., & Farrow, V. (2008). The assessment of present-moment awareness and acceptance : The Philadelphia mindfulness scale. *Assessment, 15*(204), 204-223.

Carlson, L. E., Ursuliak, Z., Goodey, E., Angen, M., & Speca, M. (2001). The effects of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients: 6-month follow-up. *Supportive Care in Cancer, 9*, 112-123.

Carmody, J., Baer, R. A., Lykins, E. L. B., & Olendzki, N. (2009). An Empirical Study of the Mechanisms of Mindfulness in a Mindfulness-Based Stress Reduction Program. *Journal of Clinical Psychology, 65*(6), 613-626. doi: 10.1002/jclp.20579.

Cash, M., & Whittingham, K. (2010). What Facets of Mindfulness Contribute to Psychological Well-being and Depressive, Anxious, and Stress-related Symptomatology? *Mindfulness, 1*(3), 177-182. doi: 10.1007/s12671-010-0023-4.

Chadwick, P., Hember, M., Symes, J., Peters, E., Kuipers, E., & Dagnan, D. (2008). Responding mindfully to unpleasant thoughts and images: Reliability and validity of the Southampton Mindfulness Questionnaire (SMQ). *British Journal of Clinical Psychology, 44*, 451-455.

Cheung, G., & Lau, R. (2008). Testing mediation and suppression effects of latent variables: Bootstrapping with structural equation models. *Organizational Research Methods, 11*, 296-325.

Cho, S., Heiby, E. M., McCracken, L. M., Lee, S.-M., & Moon, D.-E. (2010). Pain-Related Anxiety as a Mediator of the Effects of Mindfulness on Physical and Psychosocial Functioning in Chronic Pain Patients in Korea. *The Journal of Pain, 11*(8), 789-797. doi: 10.1016/j.jpain.2009.12.006.

Ciarrochi, J., Kashdan, T. B., Leeson, P., Heaven, P., & Jordan, C. (2010). On being aware and accepting: A one-year longitudinal study into adolescent well-being. *Journal of Adolescence*. doi: 10.1016/j.adolescence.2010.09.003.

Coffey, K. A., & Hartman, M. (2008). Mechanisms of Action in the Inverse Relationship Between Mindfulness and Psychological Distress. *Complementary Health Practice Review, 13*(2), 79-91. doi: 10.1177/1533210108316307.

Cohen, J. (1977). *Statistical power analysis for the behavioral sciences* (2 ed.). New York: Academic Press.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385-396.

Collins, W. A. (1997). Relationships and development during adolescence: Interpersonaladaptation to individual change. *Personal Relationships, 4*, 1-14.

Conger, A. (1974). A revised definition for suppressor variables: A guide to their identification and interpretation. *Educational and Psychological Measurement, 34*, 35-46.

Dakwar, E., Mariani, J., & Levin, F. (2011). Mindfulness impairments in individuals seeking treatment for substance use disorders. *American Journal of Drug and Alcohol Abuse, 37*, 165-169.

Deikman, A. J. (1996). I = awareness. *Journal of Consciousness Studies, 3*, 350-356.

Dekeyser, M., Raes, F., Leijssen, M., Leysen, S., & Dewulf, D. (2008). Mindfulness skills and interpersonal behaviour. *Personality and Individual Differences, 44*(5), 1235-1245. doi: 10.1016/j.paid.2007.11.018.

Dempster, A. P., Laird, N. M., & Rubin, D. B. (1977). Maximum likelihood from incomplete data via the EM algorithm. *Journal of the Royal Statistical Society, Series B, 39*, 1-38.

Dew, T., & Huebner, E. S. (1994). Adolescents perceived quality of life: An exploratory investigation. *Journal of School Psychology, 32*, 185-199.

Diener, E. (1994). Assessing subjective well-being: Progress and opportunities. *Social Indicators Research, 31*(2), 103-157.

Diener, E., Emmons, R., Larsen, R., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71-76.

Diener, E., Suh, E., Lucas, R., & Smith, H. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 2*, 276-302. doi: doi:10.1037/0033-2909.125.2.276.

Divall, S., & Radovick, S. (2008). Pubertal development and menarche. *Annals of the New York Academy of Sciences, 1135*, 19-28.

Dorn, L., Dahl, R. E., Woodward, H. R., & Biro, F. (2006). Defining the boundaries of early adolescence: A user's guide to assessing pubertal status and pubertal timing in reserch with adolescents. *Applied Developmental Science, 10*(1), 30-56.

Drevets, W. C., & Raichle, M. (1998). Reciprocal suppression of regional cerebral blood flow during emotional versus higher cognitive processes: Implications for interactions between emotion and cognition. *Cognition and Emotion, 12*, 353-385.

Engler, J. (1986). Therapeutic aims in psychotherapy and meditation. In K. Wilber, J. Engler & D. P. Brown (Eds.), *Transformations of consciousness: Conventional and contemplative perspectives on development* (pp. 17-51). Boston, MA: Shambhala.

Feldman, G., Hayes, A., Kumar, S., Greeson, J., & Laurenceau, J. (2007). Mindfulness and emotion regulation: The development and initial validation of the cognitive and affective

mindfulness scale-revised (CAMS-R). *Journal of Psychopathology and Behavioral Assessment, 29*, 177-190.

Fincune, A., & Mercer, S. W. (2006). An exploratory mixed methods study of the acceptability and effectiveness of mindfulness-based cognitive therapy for patients with active depression and anxiety in primary care. *BMC Psychiatry, 6*(14), 76-91.

Gard, T., Brach, N., Hölzel, B. K., Noggle, J. J., Conboy, L. A., & Lazar, S. W. (in press). Effects of a yoga-based intervention for young adults on quality of life and perceived stress: The potential mediating roles of mindfulness and self-compassion. *The Journal of Positive Psychology, in press*. doi: 10.1080/17439760.2012.667144.

Germer, C., & Neff, K. (in preparation). How to cultivate compassion: From schools to clinical settings: Cultivating self-compassion In T. Singer (Ed.), *Compassion: From Theory, to Training, to Neuroscience*. Leipzig, Germany.

Giedd, J. (2008). The teen brain: Insights from neuroimaging. *Journal of Adolescent Health, 42*, 321-323.

Gilman, R., & Huebner, E. S. (1997). Children's reports of their life satisfaction: Convergence across raters, time, and response formats. *School Psychology International, 18*, 229-243.

Giluk, T. L. (2009). Mindfulness, big five personality, and affect: A meta-analysis. *Personality and Individual Differences, 47*, 805-811.

Gratz, K. L., & Gunderson, J. G. (2006). Preliminary data on an acceptance-based emotion regulation group intervention for deliberate self-harm among women with borderline personality disorder. *Behavior Therapy, 37*, 25-35.

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and inital validation of the Difficulties in

Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment, 26*, 41-54.

Gratz, K. L., & Tull, M. (2010). Emotion regulation as a mechanism of change in acceptance- and mindfulness-based treatments. In R. A. Baer (Ed.), *Assessing mindfulness and acceptance processes in clients: Illuminating the theory and practice of change*. Oakland, CA: New Harbinger Publications, Inc.

Greco, L., Baer, R. A., & Smith, G. T. (2011). Assessing mindfulness in children and adolescents: Development and validation of the child and adolescent mindfulness measure (CAMM). *Psychological Assessment*.

Greeson, J. M. (2009). Mindfulness Research Update: 2008. *Complementary Health Practice Review 2009, 14*(10), 10-18.

Gregory, A., Caspi, A., Eley, T., Moffitt, T., O'Connor, T., & Poulton, R. (2005). Prospective longitudinal associations between persistent sleep problems in childhood and anxiety and depression disorders in adulthood. *Journal of Abnormal Child Psychology, 33*(157-163).

Grossman, P. (2008). On measuring mindfulness in psychosomatic and psychological research. *Journal of Psychosomatic Research, 64*(4), 405-408. doi: 10.1016/j.jpsychores.2008.02.001.

Grossman, P. (2010a). Mindfulness for psychologists: Paying kind attention to the perceptible. *Mindfulness, 1*, 87-97.

Grossman, P. (2010b). *The present moment on mindfulness research*. Paper presented at the Center for Mindfulness Scientific Conference 2010, Worcester, MA.

Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits - A meta-analysis. *Journal of Psychosomatic Research, 57*(1), 35-43. doi: 10.1016/s0022-3999(03)00573-7.

Grossman, P., Tiefenthaler-Gilmer, U., Raysz, A., & Kesper, U. (2007). Mindfulness training as an intervention for fibromyalgia: Evidence of postintervention and 3-year follow-up benefits in well-being. *Psychotherapy and Psychosomatics, 76*(4), 226-233. doi: 10.1159/000101501.

Grossman, P., & Van Dam, N. T. (2011). Mindfulness by any other name...: Trials and tribulations of *sati* in western psychology and science. *Contemporary Buddhism, 12*.

Gunaratana, H. (2002). *Mindfulness in plain English*. Boston, MA: Wisdom Publications.

Harter, S. (1990). Self and identity development. In S. Feldman & G. R. Elliot (Eds.), *At the threshold: The developing adolescent* (pp. 352-387). Cambridge, MA: Harvard University Press.

Harter, S. (1993). Causes and consequences of low self esteem in children and adolescents. In R. G. Baumeister (Ed.), *Self-esteem: The puzzle of low self-regard* (pp. 87-116). New York: Plenum Press.

Hayes, S. C. (1994). Content, context, and the types of psychological acceptance. In S. C. Hayes, N. S. Jacobsen, V. M. Follette & M. J. Dougher (Eds.), *Acceptance & change: Content and context in psychotherapy* (pp. 13-32). Reno: NV: Context Press.

Herndon, F. (2008). Testing mindfulness with perceptual and cognitive factors: External vs. internal encoding, and the cognitive failures questionnaire. *Personality and Individual Differences, 44*, 32-41.

Hofmann, S. G., Sawyer, A. T., Witt, A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 78*(2), 169-183.

Huebner, E. S. (1991). Initial Development of the Student's Life Satisfaction Scale. *School Psychology International, 12*(3), 231-240. doi: 10.1177/0143034391123010.

Huebner, E. S., & Alderman, G. (1993). Convergent and discriminant validity of a children's life satisfaction scale: Its relationship to self- and teacher reported psychological problems and school functioning. *Social Indicators Research, 46*, 1-22.

Huebner, E. S., Funk, B. A., & Gilman, R. (2000). Cross-sectional and Longitudinal Psychosocial Correlates of Adolescent Life Satisfaction Reports. *Canadian Journal of School Psychology, 16*(1), 53-64. doi: 10.1177/082957350001600104.

Huppert, F., & Johnson, D. (2010). A controlled trial of mindfulness training in schools: The importance of practice for an impact of well-being. *Journal of Positive Psychology, 5*(4), 264-274.

Ivanovski, B., & Malhi, G. S. (2007). The psychological and neurophysiological concomitants of mindfulness forms of meditation. *Acta Neuropsychiatrica, 19*, 76-91.

Jimenez, S. S., Niles, B. L., & Park, C. L. (2010). A mindfulness model of affect regulation and depressive symptoms: Positive emotions, mood regulation expectancies, and self-acceptance as regulatory mechanisms. *Personality and Individual Differences, 49*(6), 645-650. doi: 10.1016/j.paid.2010.05.041.

Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry, 4*, 33-47.

Kabat-Zinn, J. (1990). *Full Catastrophe Living*. New York: Random House.

Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness in Everyday Life*. New York: Hyperion.

Kabat-Zinn, J., Lipworth, L., & Burney, R. (1985). The clinical use of mindfulness meditation for the self-regulation of chronic pain. *Journal of Behavioral Medicine, 8*(2), 163-190.

Kabat-Zinn, J., Lipworth, L., Burney, R., & Sellers, W. (1987). Four-year follow-up of a meditation-based program for the self-regulation of chronic pain: Treatment outcoms and compliance. *Clinical Journal of Pain, 2*, 159-173.

Kabat-Zinn, J., Massion, M. D., Kristeller, J., Peterson, L. G., Fletcher, K. E., Phert, L., . . . Santorelli, S. (1992). Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders. *American Journal of Psychiatry, 149*, 936-943.

Kabat-Zinn, J., Wheeler, E., Light, T., Skillings, A., Scharf, M. J., Cropley, T. G., . . . Bernhard, J. D. (1998). Influence of a mindfulness meditation-based stress reduction intervention on rates of skin clearing in patients with moderate to severe psoriasis undergoing phototherapy (UVB) and photochemotherapy (PUVA). *Psychosomatic Medicine, 60*(5), 625-632.

Keating, D. (2004). Cognitive and brain development. In R. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (2 ed.). New York: Wiley.

Keng, S.-L., Smoski, M. J., & Robins, C. J. (2011). Effects of mindfulness on psychological health: A review of empirical studies. *Clinical Psychology Review, 31*(6), 1041-1056. doi: 10.1016/j.cpr.2011.04.006.

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3 ed.). New York, NY: Guilford Press.

Kutz, I., Leserman, J., Dorrington, C., Morrison, C., Borysenko, J., & Benson, H. (1985). Meditation as an adjunct to psychotherapy. *Psychotherapy and Psychosomatics, 43*, 209-218.

Kuyken, W., Watkins, E., Holden, E., White, K., Taylor, R. S., Byford, S., . . . Dalgleish, T. (2010). How does mindfulness-based cognitive therapy work? *Behaviour Research and Therapy, 48*, 1105-1112. doi: 10.1016/j.brat.2010.08.003.

Lau, M. A., Bishop, S. R., Segal, Z. V., Buis, T., Anderson, N. D., Carlson, L., . . . Devins, G. (2006). The Toronto Mindfulness Scale: Development and validation. *Journal of Clinical Psychology, 62*(12), 1445-1467. doi: 10.1002/jclp.20326.

Lazarus, R. (1977). Psychological stress and coping in adaptation and illness. In Z. Lipowski, D. Lipsi & P. Whybrow (Eds.), *Psychosomatic Medicine: Current Trends* (pp. 14-26). New York: Oxford University Press.

Lazarus, R. (1991). *Emotion and adaptation*. New York, NY: Oxford University Press.

Lazarus, R. (1999). *Stress and emotion: A new synthesis*. New York: Springer Publishing Company.

Lazarus, R. (2006). *Stress and emotion: A new synthesis*. New York: Springer.

Lazarus, R., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.

Leahey, T. M., Crowther, J. H., & Irwin, S. R. (2008). A cognitive-behavioral mindfulness group therapy intervention for the treatment of binge eating in bariatric surgery patients. *Cognitive and Behavioral Practice, 15*, 364-375.

Lykins, E., & Baer, R. A. (2009). Psychological functioning in a sample of long-term practitioners of mindfulness meditation. *Journal of Cognitive Psychotherapy, 23*, 226-241.

MacKinnon, D. (2008). *Introduction to statistical mediation analysis*. New York, NY: Lawrence Erlbaum Associates.

MacKinnon, D., Lockwood, C., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate and Behavioral Research, 39*, 99-128.

Marcia, J. E. (1980). Identity in adolescence. In J. Adelson (Ed.), *Handbook of Adolescent Psychology*. New York, NY: Wiley and Sons.

Marshall, W. (1978). Puberty. In F. Falkner & J. Tanner (Eds.), *Human growth* (Vol. 2). New York: Plenum.

Martin, R., Kazarian, S., & Breiter, H. (1995). Perceived stress, life events, dysfunctional attitudes, and depression in adolescent psychiatric inpatients. *Journal of Psychopathology and Behavioral Assessment, 17*(1), 81-95.

Massion, A. O., Teas, J., Hebert, J. R., Wertheimer, M. D., & Kabat-Zinn, J. (1995). Meditation, melatonin, and breast/prostate cancer: Hypothesis and preliminary data. *Medical Hypotheses, 44*, 39-46.

Masuda, A., Wendell, J. W., Chou, Y.-Y., & Feinstein, A. B. (2010). Relationships among self-concealment, mindfulness and negative psychological outcomes in Asian American and European American college students. *International Journal for the Advancement of Counselling, 32*(3), 165-177. doi: 10.1007/s10447-010-9097-x.

Mendelson, T., Greenberg, M. T., Dariotis, J., Gould, L., Rhoades, B., & Leaf, P. (2010). Feasibility and preliminary outcomes of a school-based mindfulness intervention for urban youth. *Journal of Abnormal Child Psychology, 38*, 985-994.

Middlebrooks, J. S., & Audage, N. C. (2008). *The effects of childhood stress on health across the lifespan*. Atlanta, GA.

Miller, J. J., Fletcher, K. E., & Kabat-Zinn, J. (1995). Three-year follow-up and clinical implications of a mindfulness meditation-based stress reduction intervention in the treatment of anxiety disorders. *General Hospital Psychiatry, 17*, 192-200.

Moore, P. (2008). Introducing mindfulness to clinical psychologists in training: An experiential course of brief exercises. *Journal of Clinical Psychology in Medical Settings, 15*, 331-337.

Morone, N., Greco, C., & Weiner, D. (2008). Mindfulness meditation for the treatment of chronic low back pain in older adults: A randomized controlled pilot study. *Pain, 134*, 310-319.

Mulaik, S., James, L., Van Alstine, J., Bennett, N., Lind, S., & Stilwell, C. D. (1989). Psychological Bulletin. *105*, 430-445.

Muthén, L. K., & Muthén, B. O. (1998-2010). *MPlus User's Guide* (6th ed.). Los Angeles: Author.

Neff, K. (2003a). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*, 223-250. doi: 10.1080/15298860390209035.

Neff, K. (2003b). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity, 2*, 85-101.

Neff, K., & Germer, C. (under review). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of Social and Clinical Psychology*.

Neff, K., & McGehee, P. (2010). Self-compassion and psychological resisitance among adolescents and young adults. *Self and Identity, 9*, 225-240.

Neff, K., & Vonk, R. (2008). Self-compassion versus global self-esteem: Two different ways of relating to oneself. *Journal of Personality 77*, 23-50.

Nolen-Hoecksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology, 100*, 569-582.

Nolen-Hoecksema, S., & Morrow, J. (1991). Effects of rumination and distraction on naturally occurring depressed mood. *Cognition and Emotion, 7*(6), 561-570.

Nyaniponika. (1973). *The heart of Buddhist meditation*. New York: Weiser Books.

Patten, C., Choi, W., Gillin, J., & Pierce, J. (2000). Depressive symptoms and cigarette smoking predict development and persistence of sleep problems in US adolescents. *Pediatrics, 106*, E23.

Pradhan, E. K., Baumgarten, M., Langenberg, P., Handwerger, B., Gilpin, A. K., Magyari, T., . . . Berman, B. (2007). Effect of mindfulness-based stress reduction in rheumatoid arthritis patients. *Arthritis and Rheumatism,, 57*, 1134-1142.

Preacher, K., & Hayes, A. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers, 36*, 717-731.

Raes, F., Dewulf, D., Van Heeringen, C., & Williams, J. M. G. (2009). Mindfulness and reduced cognitive reactivity to sad mood: Evidence from a correlational study and a non-randomized waiting list controlled study. *Behavior Research and Therapy, 47*, 623-627.

Raes, F., & Williams, J. M. G. (2010). The relationship between mindfulness and uncontrollability of ruminative thinking. *Mindfulness, 1*. doi: 10.1007/s12671-010-0021-6.

Rasmussen, M. K., & Pidgeon, A. M. (2011). The direct and indirect benefits of dispositional mindfulness on self-esteem and social anxiety. *Anxiety, Stress & Coping, 24*(2), 227-233. doi: 10.1080/10615806.2010.515681.

Roberts, R., Roberts, C., & Chen, I. (2002). Impact of insomnia on future functioning of adolescents. *Journal of psychosomatic research, 53*, 561-569.

Roberts, R., Roberts, C., & Duong, H. (2008). Chronic insomnia and its negative consequences for health and functioning of adolescents: a 12-month prospective study. *Journal of Adolescent Health, 42*, 294-302.

Roemer, L., & Orsillo, S. N. (2003). Mindfulness: A promising intervention strategy in need of further study. *Clinical Psychology: Science and Practice 10*, 172-178.

Rosenzweig, S., Reibel, D. K., Greeson, J. M., Edman, J., Jasser, S., McMearty, K. D., & Goldstein, B. (2007). Mindfulness-based stress reduction is associated with improved glycemic control in type 2 diabetes mellitus: a pilot study. *Alternative Therapies in Health and Medicine, 13*, 36-38.

Salzberg, S. (2011). *Real happiness: The power of meditation*. New York, NY: Workman Publishing.

Sauer, S., Walach, H., & Kohls, N. (2011). Gray's Behavioural Inhibition System as a mediator of mindfulness towards well-being. *Personality and Individual Differences, 50*(4), 506-511. doi: 10.1016/j.paid.2010.11.019.

Schonert-Reichl, K. A., & Lawlor, M. S. (2010). The effects of a mindfulness-based education program on pre- and early adolescents' well-being and social and emotional competence. *Mindfulness, 1*(3), 137-151. doi: 10.1007/s12671-010-0011-8.

Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. New York: Guilford Press.

Selye, H. (1974). *Stress without distress*. Philadelphia, PA: Lippencott.

Shapiro, S. (2009). The integration of mindfulness and psychology. *Journal of Clinical Psychology, 65*(6), 555-560.

Shapiro, S., Astin, J., Bishop, S., & Cordova, M. (2005). Mindfulness-based stress reduction for health care professionals: Results from a randomized trial. *International Journal of Stress Management, 12*(2), 164-176.

Shapiro, S., Brown, B., & Biegel, G. (2007). Teaching self-care to caregivers: Effects of mindfulness-based stress reduction on the mental health of therapists in training. *Training and education in professional psychology, 1*(2), 105-115.

Shapiro, S., Carlson, L. E., Astin, J., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology, 62*(3), 373-386.

Shin, D. C., & Johnson, D. M. (1978). Avowed happiness as an overall assessment of the quality of life. *Social Indicators Research, 5*(475-492).

Shrout, P., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendation. *Psychological Methods, 7*, 422-445.

Siegel, D. (1999). *The developing mind: Toward a neurobiology of interpersonal experience*. New York, NY: Guilford.

Siegel, D. (2001). Toward an interpersonal neurobiology of the developing mind: Attachment relationships, "mindsight" and neural integration. *Infant Mental Health 22*, 67-94.

Siegel, D. (2010). *Mindsight: The new science of personal transformation*. New York, NY: Bantam Books.

Simmons, R. G., Rosenberg, F., & Rosenberg, M. (1973). Disturbance in the self-image at adolescence. *American Sociological Review, 38*, 553-568.

Singh, N., Lancioni, G., Winton, A., Singh, J., Singh, A., Adkins, A., & Wahler, R. (2010). Training in mindful caregiving transfers to parent–child interactions. *Journal of Child and Family Studies, 19*(2), 167-174.

Speca, M., Carlson, L. E., Goodey, E., & Angen, M. (2000). A randomized, wait-list controlled clinical trial: The effect of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients. *Psychosomatic Medicine, 62*, 613-622.

Steinberg, L. (1999). *Adolescence*. Boston: McGraw Hill-College.

Steinberg, L. (2004). Risk-taking in adolescence: What changes, and why? *Annals of the New York Academy of Sciences, 1021*, 51-58.

Steinberg, L. (2007). Risk taking in adolescence - New perspectives from brain and behavioral science. *Current Directions in Psychological Science, 16*(2), 55-59.

Susman, E., & Dorn, L. (2009). Puberty: Its role in development. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (Third ed.). New York: Wiley.

Tabachnick, B., & Fidell, L. (2001). *Using multivariate statistics* (4th ed.). Boston: Allyn & Bacon.

Teasdale, J. D. (2004). Mindfulness-based cognitive therapy. In J. Yiend (Ed.), *Cognition, emotion and psychopathology* (pp. 270-289). Cambridge, UK: Cambridge University Press.

Teasdale, J. D., Segal, Z. V., & Williams, J. M. G. (1995). How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness training) help? *Behaviour Research and Therapy, 33*, 25-39.

Teasdale, J. D., Williams, J. M. G., Soulsby, J. M., & Segal, Z. V. (2000). Prevention of relapse/recurrence in major depression by mindfulness-based cognitive thereapy. *Journal of Consulting and Clinical Psychology, 68*, 615-623.

Thompson, B. L., & Waltz, J. (2007). Everyday mindfulness and mindfulness meditation: Overlapping constructs or not? *Personality and Individual Differences, 43*, 1875-1885.

Twohig, M., Field, C., Armstrong, A., & Dahl, A. (2010). Acceptance and mindfulness as mechanisms of change in mindfulness-based interventions for children and adolescents. In R. A. Baer (Ed.), *Assessing mindfulness and acceptance processes in clients: Illuminating the theory and practice of change* (pp. 225-249). Oakland: New Harbinger Publications.

Walach, H., Buchheld, N., Buttenmuller, B., Kleinknecht, N., & Schmidt, S. (2006). Measuring mindfulness- the Freiburg mindfulness inventory (FMI). *Personality and Individual Differences, 40,* 1543-1555.

Waters, A. J., Reitzel, L. R., Cinciripini, P., Li, Y., Marcus, M. T., Vidrine, J. I., & Wetter, D. W. (2009). Associations between mindfulness and implicit cognition and self-reported affect. *Substance Abuse, 30*(4), 328-337. doi: 10.1080/08897070903252080

Watson, T., Clark, L., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology 54*, 1063-1070.

Weinstein, N., Brown, K. W., & Ryan, R. M. (2009). A multi-method examination of the effects of mindfulness on stress attribution, coping, and emotional well-being. *Journal of Research in Personality, 43*(3), 374-385. doi: 10.1016/j.jrp.2008.12.008

Yarcheski, A., & Mahon, N. (1999). The moderator-mediator role of social support in early adolescence. *Western Journal of Nursing Research, 21*(5), 685-698.

Zautra, A. J., Davis, M. C., Reich, J. W., Nicassario, P., Tennen, H., Finan, P., . . . Irwin, M. (2008). Comparison of cognitive behavioral and mindfulness meditation interventions on adaptation to rheumatoid arthritis for patients with and without history of recurrent depression. *Journal of Consulting and Clinical Psychology, 76*, 408-421.

Zou, G. Y. (2007). Toward using confidence intervals to compare correlations. *Psychological Methods, 12*, 399-413.

Appendix A
Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being

Cover letter

Dear Parent or Guardian,

My name is Karen Bluth and I'm a doctoral student at University of Tennessee. I am inviting your child to participate in my dissertation study. This project has been approved by the Knox County Schools' Research and Evaluation Department (Project #1112014) and the University of Tennessee Institutional Review Board (Project #FWA6629).

Please find below a list of questions and answers about the project. Once you have reviewed this information, please discuss the project with your child. If you and your child are interested in the study, please read and sign the parent consent form and ask your child to read and sign the student assent form.

As a parent of two adolescents myself, and a former middle school teacher, I know very well, and from many angles the challenges and rewards of parenting children of this age. I very much appreciate your taking time out of your busy lives to consider my project!

Thanks so much,

Karen Bluth
Department of Child and Family Studies
University of Tennessee, Knoxville
Email: bluth@utk.edu
Phone: (865) 974-5316

Adolescent Stress: Exploring a Pathway to Emotional Well-Being

If I allow my child to participate, what will he or she do?

- Fill out an online survey which asks questions about how attentive she feels she is in general, about her mood, the level of stress she feels she has in her life, and how much she is able to control her feelings.

How long will this survey take?

- We anticipate that this survey takes no longer than 30 minutes.

Does my child have to participate?

- No. Your child's participation in this study is completely voluntary, and your decision whether or not to allow your child to take part will not affect your current or future relationship with your child's school or UT.

Will my child's teacher or principal be able to see their data? Will I?

- No. Only researchers at the University of Tennessee will be able to view your child's data.
- Your child's name will not be used on the online survey, but will be instead assigned an ID number.

What's the purpose of this study anyway?

- This study aims to look at how mindfulness, or paying attention from moment to moment, impacts adolescents' sense of emotional well-being.

I would like my child to participate. Now what?

1. **Please carefully read and sign the "parent/guardian consent form".**
2. **Discuss the study with your child.**
3. **Send your signed consent form and your child's signed assent form to school and deposit it in the designated locked box in the office.**

Appendix B
Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being

Parent/Guardian Consent Form

Study Copy (please return to school in envelope provided)

Your child is invited to participate in the study *Adolescent Stress: Exploring a Pathway to Emotional Well-Being.* This is a dissertation study being conducted by a doctoral student and supervised by a researcher at UT. The purpose of this study is to determine if there is a correlation between adolescents' attentiveness (mindfulness) and overall sense of well-being, and if so, how this happens. An increased sense of well-being has been linked with many positive outcomes in adolescents (improved academics, less aggression, easier relationships with friends, etc.).

If you give your child permission to participate, he or she will take an online survey which should take no longer than 30 minutes.

Risks: The anticipated risks in this study are minimal.

Benefits: Your child may have a clearer sense of her perceived stress, degree to which she is attentive in general, or her mood.

Confidentiality: All information that we receive from your child will be kept strictly confidential and available only to UT researchers involved with the study. Participants will be automatically provided with a number when beginning the online survey; there will be no document linking assigned numbers to student names.

Voluntary Participation: Your child's participation in this study is completely voluntary. You can withdraw her from participating at any point in the study. In addition, she can leave out any questions on the questionnaires that she does not feel comfortable answering. None of these decisions will affect the relationship with her school or UT.

Contact Information: If you have any questions at any time about the study or the procedures involved, you may contact the researcher, Karen Bluth, at Department of Child and Family Studies, 1215 Cumberland Ave., JHB 115, or 865-974-5316. If you have questions about the rights of your child as a research participant, please contact the Office of Research Compliance Officer at 865-974-3466.

Consent: I have read the above information. I agree to have my child, _____, participate in the study. (child's name)

Parent/guardian's name _____

Parent/guardian's signature_____date_____

Appendix C
Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being

Student Assent Form

Study Copy (please return to school in envelope provided)

You are being invited to be part of a study to see if being attentive to yourself and your moment-to moment experiences will help you feel better about yourself. We are doing this study to try to find ways to help preteens and teens have an easier time with school, friends, and growing up in general.

If you agree to be part of this study, you will fill out an online survey which should take no longer than 30 minutes. That's it!

Your participation in the study is voluntary, which means you can skip any questions that make you feel uncomfortable and that you can stop the study at any time.

All your answers will be kept private, and only the researcher will know how you answered the questions. We will not share any of your answers with your parent/guardian or teachers.

If you sign this paper, it means that you have read it and that you agree to be in the study. Being in the study is up to you, and no one will be upset with you if you don't sign it or if you change your mind later.

Your signature _____ Date _____

Your printed name _____ Date _____

Appendix D
Initial Email/Phone call

Hello, this is _____, vice principal at West High School with an important message. Your child has been invited to participate in a University of Tennessee study about adolescents which will be conducted at the school. Information about this study is being sent home today with your child. If you are interested in having your child participate in this voluntary study, please fill out and sign the form that are being sent home today, and have your child fill out the form on the reverse. Please then have your child return them to one of the locked boxes in either the main office or the guidance office. If your child participates, he or she will be entered in a drawing for an Ipad.

Appendix E
Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being

Follow-up email /phone call (reminder)

Hello, this is _____, vice principal at West High School with an important message. This is to remind you that tomorrow is the last day for you to send in signed forms for your child to participate in the University of Tennessee study that is being conducted at West High. If you are interested in having your child volunteer to participate, please make sure that you sign the consent form, have your child sign the reverse side of the form, and send the form back to school with your child. Remember that your child will be entered in a drawing for an Ipad if he or she participates in this study.

Appendix F
Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being

WIN

It could be YOU …. Just:

- **SIGN** and get parent/guardian to **SIGN** consent forms (went home last week)
- **Deposit** them in locked boxes in office and guidance office
- **Take survey** (10 minutes) in library next week before school, after school, or during lunch.

That's it! You get entered into the drawing! You can't win if you don't enter!

Good luck!

Appendix G
Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being
Parent/Guardian Consent Form **(revised)**

Your child is invited to participate in the study *Adolescent Stress: Exploring a Pathway to Emotional Well-Being.* This is a dissertation study being conducted by a doctoral candidate and supervised by a faculty researcher at University of Tennessee. The purpose of this study is to determine if there is a relationship between adolescents' attentiveness (mindfulness) and overall sense of well-being, and if so, how this happens. An increased sense of well-being has been linked with many positive outcomes in adolescents (improved academics, less aggression, easier relationships with friends, etc.).

If you give your child permission to participate, he or she will take a one-time online survey in the school library which should take no longer than 15 minutes.

Risks: The anticipated risks in this study are minimal, and no greater than that encountered in everyday life.

Benefits: Your child may have a clearer sense of her emotions, degree to which she is attentive in general, or her mood.

Compensation: If your child participates in this study, he or she will be entered in a drawing for an Ipad. In addition, the first 150 students to bring in consent/assent forms and complete the survey will receive a $1.00 cookie coupon.

Confidentiality: All information that we receive from your child will be kept strictly confidential and available only to University of Tennessee researchers involved with the study. There will be no document linking the information your child provides with his or her name.

Voluntary Participation: Your child's participation in this study is completely voluntary. You can withdraw her from participating at any point in the study. In addition, she can leave out any questions on the questionnaires that she does not feel comfortable answering. Choosing to withdraw your child will not affect the relationship with West High School or University of Tennessee.

Contact Information: If you have any questions at any time about the study or the procedures involved, you may contact the researcher, Karen Bluth, at Department of Child and Family Studies, 1215 Cumberland Ave., JHB 115, or 865-974-5316. You can also reach Dr. Priscilla Blanton, faculty advisor, at the same address and phone number. If you have questions about the rights of your child as a research participant, please contact the Office of Research Compliance Officer at 865-974-3466.

Consent: I have read the above information. I agree to have my child, _____, participate in the study. (student's full name – please print)

Parent/guardian's name _____

Parent/guardian's signature_____date_____

Appendix H
Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being
Student Assent Form **(revised)**
Study Copy (please return to school in envelope provided)

You are being invited to be part of a study to see if being attentive to yourself and your moment-to moment experiences will help you feel better about yourself. We are doing this study to try to find ways to help preteens and teens have an easier time with school, friends, and growing up in general. If you agree to be part of this study, you will fill out an online survey in the library at school which should take no longer than 15 minutes. You will take the survey in the library either before school, after school, or during lunch. That's it!

Your participation in the study is voluntary; you can skip any questions that make you feel uncomfortable and that you can stop the study at any time.

All your answers will be kept private, and only the researcher will know how you answered the questions. We will not share any of your answers with your parent/guardian or teachers.

If you sign this paper, it means that you have read it and that you agree to be in the study.

If you decide to participate, your name will be entered in a drawing for an Ipad. In addition, the first 150 students to bring in consent/assent forms and complete the survey will receive a $1.00 cookie coupon. Good luck!

Thank you!

Your signature _____ Date _____

Your printed name _____ Date _____

Please indicate preferred time to take the survey:

□ Before school □ After school □ During lunch

If lunch is your preferred time to take the survey, please indicate lunch period_____.

Appendix I
Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being

Free Cookie Coupon*

***for 1st 150 who sign up!**

Extra forms available in guidance
Survey starts 2-21

Appendix J
Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being

Email/phone call extending time to bring in consent/assent forms

This is _____ vice principle of West High School with an important message. The deadline for your child to bring in consent forms for the UT study in which he or she will be entered into a drawing for an Ipad 2 has been extended through next week. In addition to the Ipad drawing, a cookie coupon will be given to the first 150 students who sign up and take the survey. This is a 10 minute on-line survey that will take place in the school library before school, after school, and during lunch the week of February 21-24. In order to participate, students and parents must sign the forms sent home last week and students must deposit them in the locked box in either the main office or guidance office. Extra forms are available in the guidance office.

Appendix K
Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being

If you brought in your forms for the UT study, it's …

THIS WEEK

In the LIBRARY

Before school, after school, or during lunch.

Remember: You don't get into the drawing for the Ipad or get a cookie coupon until you take the survey!

Appendix L

Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being

Child and Adolescent Mindfulness Measure

We want to know more about what you think, how you feel, and what you do. **Read** each sentence. Then, circle the number that tells **how often each sentence is true for you. All responses are voluntary.**

	Never True	Rarely True	Some-times True	Often True	Always True
1. I get upset with myself for having feelings that don't make sense.	0	1	2	3	4
2. At school, I walk from class to class without noticing what I'm doing.	0	1	2	3	4
3. I keep myself busy so I don't notice my thoughts or feelings.	0	1	2	3	4
4. I tell myself that I shouldn't feel the way I'm feeling.	0	1	2	3	4
5. I push away thoughts that I don't like.	0	1	2	3	4
6. It's hard for me to pay attention to only one thing at a time.	0	1	2	3	4
7. I get upset with myself for having certain thoughts.	0	1	2	3	4
8. I think about things that have happened in the past instead of thinking about things that are happening right now.	0	1	2	3	4
9. I think that some of my feelings are bad and that I shouldn't have them.	0	1	2	3	4
10. I stop myself from having feelings that I don't like.	0	1	2	3	4

Appendix M
Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being

The PANAS

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way over the past few days. Use the following scale to record your answers. All responses are voluntary.

1	2	3	4	5
Very slightly Or not at all	A little	Moderately	Quite a bit	Extremely

___ interested

___ excited

___strong

___ scared

___ enthusiastic

___irritable

___ashamed

___nervous

___attentive

___active

___ distressed

___upset

___ guilty

___ hostile

___ proud

___alert

___inspired

___determined

___ jittery

___afraid

Appendix N

Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. All responses are voluntary. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

Almost never				**Almost always**
1	**2**	**3**	**4**	**5**

_____ 1. I'm disapproving and judgmental about my own flaws and inadequacies.

_____ 2. When I'm feeling down I tend to obsess and fixate on everything that's wrong.

_____ 3. When things are going badly for me, I see the difficulties as part of life that everyone goes through.

_____ 4. When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world.

_____ 5. I try to be loving towards myself when I'm feeling emotional pain.

_____ 6. When I fail at something important to me I become consumed by feelings of inadequacy.

_____ 7. When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am.

_____ 8. When times are really difficult, I tend to be tough on myself.

_____ 9. When something upsets me I try to keep my emotions in balance.

_____ 10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.

_____ 11. I'm intolerant and impatient towards those aspects of my personality I don't like.

_____ 12. When I'm going through a very hard time, I give myself the caring and tenderness I need.

_____ 13. When I'm feeling down, I tend to feel like most other people are probably happier than I am.

_____ 14. When something painful happens I try to take a balanced view of the situation.

_____ 15. I try to see my failings as part of the human condition.

_____ 16. When I see aspects of myself that I don't like, I get down on myself.

_____ 17. When I fail at something important to me I try to keep things in perspective.

_____ 18. When I'm really struggling, I tend to feel like other people must be having an easier time of it.

_____ 19. I'm kind to myself when I'm experiencing suffering.

_____ 20. When something upsets me I get carried away with my feelings.

_____ 21. I can be a bit cold-hearted towards myself when I'm experiencing suffering.

_____ 22. When I'm feeling down I try to approach my feelings with curiosity and openness.

_____ 23. I'm tolerant of my own flaws and inadequacies.

_____ 24. When something painful happens I tend to blow the incident out of proportion.

_____ 25. When I fail at something that's important to me, I tend to feel alone in my failure.

_____ 26. I try to be understanding and patient towards those aspects of my personality I don't like.

Appendix O

Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being

Student Life Satisfaction Scale

Please indicate how often you feel the indicated statement is true for you by indicating the number of your response to the left of the statement. All responses are voluntary.

0	1	2	3
Never	Sometimes	Often	Almost always

1._____ My life is going well.

2._____ My life is just right.

3._____ I would like to change many things in my life.

4. _____ I wish I had a different kind of life.

5. _____I have a good life.

6. _____I have what I want in life.

7. _____My life is better than most kids.

Appendix P
Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate. For each question choose from the following alternatives:

0	1	2	3	4
Never	Almost never	Sometimes	Fairly often	Very often

_____1. In the last month, how often have you been upset because of something that happened unexpectedly?

_____2. In the last month, how often have you felt that you were unable to control the important things in your life?

_____3. In the last month, how often have you felt nervous and "stressed"?

_____ 4. In the last month, how often have you dealt successfully with irritating life hassles?

_____5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?

_____6. In the last month, how often have you felt confident about your ability to handle your personal problems?

_____7. In the last month, how often have you felt that things were going your way?

_____8. In the last month, how often have you found that you could not cope with all the things that you had to do?

_____9. In the last month, how often have you been able to control irritations in your life?

_____10. In the last month, how often have you felt that you were on top of things?

_____11. In the last month, how often have you been angered because of things that happened that were outside of your control?

_____12. In the last month, how often have you found yourself thinking about things that you have to accomplish?

_____13. In the last month, how often have you been able to control the way you spend your time?

_____14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Appendix Q
Mindfulness: Exploring a Pathway to Adolescent Emotional Well-Being

Demographic questionnaire

Please circle the appropriate response to each question:

1. Your age:

13 14 15 16 17 18 19

2. Your gender:

Boy Girl

3. The race/ethnicity that you consider yourself:

Black White Asian East Indian American Indian Pacific Islander Latino/Hispanic African

4. Number of computers you have in your home (if you spend your time at more than one home, please choose the home where you spend the most time):

1 2 3 4 5 6 7 8

5. Please indicate the number of cars at your home (if you spend your time at more than one home, please choose the home where you spend the most time):

0 1 2 3 4 5 6 7

6. Please circle the number of vacations your family has taken in the last year:

0 1 2 3 4

For the next two questions, if you do not live with your mother and/or father, answer for the one or two adults living in your home that you are closest to, and check the box where indicated.

7. What best describes the highest level of your mother's education?

- ☐ Less than high school
- ☐ High School graduate
- ☐ Some college
- ☐ College graduate
- ☐ Masters degree
- ☐ Doctorate or professional degree

8. What best describes the highest level of your father's education?

- ☐ Less than high school
- ☐ High School graduate
- ☐ Some college
- ☐ College graduate
- ☐ Masters degree
- ☐ Doctorate or professional degree

Vita

Karen Bluth received her Bachelor of Science degree from Duke University in December, 1979, and teaching certification and Master's of Science degree from Southern Connecticut State University in 1989 and 1990, respectively. She taught elementary and middle school for 18 years in public and private schools both in the U.S. and Ecuador before returning to graduate school in fall, 2008 to complete her Doctor of Philosophy in Child and Family Studies at University of Tennessee. Her interest in mindfulness began when she was an adolescent and researched the subject for a high school independent study project. Since then, mindfulness practice has been an anchor in her life, supporting her through life's trials and adventures, and contributing to her own emotional well-being.